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Development of Veterinary Work in India*

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This being the Jubilee meeting of the Indian Science Congress Association, rather than address you on a scientific subject, I will try to give a brief account of the development of veterinary work in India.

As long ago as 1768, Joseph Earl published in Calcutta an English translation of a Sanskrit work on the diseases of horses, entitled "Saluter and Farrier" and subsequently J. P. Pigget, a Lieutenant of Indian Cavalry, published, also in Calcutta, a treatise on the horses of India in which he suggested that Government should take up horse-breeding. But neither of these seems to have had any veterinary training and the need for veterinary assistance in India seems not to have been understood until after 1774 when the East India Company started horse-breeding studs. It is recorded that their operations up to that time had proved a failure and that disease was rampant. The actual record of veterinary work in this country seems to have commenced in 1799, when veterinary surgeons, trained at the London Veterinary College, were drafted to India for the organisation of cattle and camel breeding and the establishment of studs for the breeding of cavalry horses.

William Moorcroft, who came to India in 1808, was one of these early veterinarians and appears to have been a man of outstanding ability, personality and energy. After receiving medical training at the Liverpool Infirmary, and while still a pupil he was invited to investigate an outbreak of cattle plague and his success in this matter led him to take up veterinary science as a permanent calling. With this object in view he joined the veterinary school at Lyons, in March, 1790, and after qualification returned to England in 1792 to take up veterinary practice in London. Sixteen years later, in order that he might take up an appointment in India which had been offered him, he gave up the extensive veterinary practice which he had built up in the meantime and, in 1808, was appointed, by the East India Company, Superintendent of their Bengal stud which was located at Pusa in North Bihar. It is recorded that by improved management he reduced losses by 90 per cent. and that among other things he was responsible for oats being cultivated in India for the first time.

While holding this appointment Moorcroft, with a view to improving the breed of remounts for India, carried out two extensive journeys in Central Asia and during the course of the second appears to have been murdered. In Bokhara he had obtained the horses he was in search of, both mares and sires, and had started on his return journey to India, but he unfortunately turned aside to visit Balkh, a place said to contain the finest horses in the world, and was never seen again. His property was plundered and his copious journals were lost for years.

The main object of his journey was therefore not achieved but his journals afterwards proved a mine of information on a great variety of subjects and it is evident that Moorcroft did a great deal to establish the value of veterinary knowledge in horse-breeding and in the care and management of breeding studs. Among other things he published a comprehensive pamphlet of directions for the use of Company officers, and was the first to introduce machine-made shoes. He also wrote a small book on shoeing and appears to have been quite familiar with the symptoms and progress of such conditions as navicular disease.

Indeed there is a record in the *Calcutta Journal* of March, 1819, that he performed the operation of neurectomy for that disease. After tying the arteries to reduce the inflammation, without benefit, he divided the nerves and removed a portion with the result that the lameness disappeared. There is also in existence a letter of Moorcroft's in which he

*Presidential address, Section of Veterinary Research, Twenty-fifth Indian Science Congress, Calcutta, 1938. Before proceeding with his address Sir Arthur Olver introduced and paid an eloquent tribute to Sir Frederick Hobday, Past Principal and Dean of the Royal Veterinary College, London, whose life-long devotion to the interest of the veterinary profession and numerous contributions to Veterinary Science were, he said, known to all his hearers.

describes the clinical features of glanders and how to stay infection. In this letter he pointed out that strangles might be confused with glanders, and drew attention to the greater frequency of generalised strangles in Asia than in Europe. He knew that farcy and glanders were due to an identical poison and that the glanders discharge, when dried, retains its virulence for months. He considered bursati to be in all probability infectious and stated that flies might carry infection.

In the journal kept by Moorcroft, in which the observations made during his travels were recorded, various matters of veterinary interest were found. Amongst others he warned the Government of India against a fatal disease met with in the Punjab, which, from the *post-mortem* appearances described by him, has since been identified as anthrax. He also mentioned a plant growing in Western Tibet, known as "Prangos," which was believed to prevent or cure fluke disease in sheep and stated that in Afghanistan a course of green feeding with "Shufteed" was given to get rid of parasites. His interests were so wide that among other things he sent home a mass of valuable information on a variety of matters connected with agriculture, and he is credited with having placed the Kashmir shawl industry on a sound footing. He described a breed of mountain sheep with wonderful wool and gave an account of a new species of the genus *Equus* which was neither horse, ass, nor mule, and which he thought might have been the Onager of Pliny. He also described the method of training horses which was adopted in Central Asia prior to a raid. The system consisted in a gradual increase of work with no bulky food; the diet being mainly barley with water given once a day only. When the horse was fit, it was considered that its faeces put in a clean dry cloth and squeezed should not leave a stain. Thus Moorcroft must have been far ahead of his time in many ways and it is recorded that he was a short, slight, quick-tempered man of high intelligence and wide interests. His tomb is in Lahore.

The earliest available official reference to veterinary work in India appears to be a general order of the Bengal Army, dated April 8th, 1793, in which it is stated that upon the appearance of a supposed infectious disease among horses, the affected would be removed from the cantonment and the matter reported to the officer commanding the station, "who will order the animals to be inspected by persons who may be judged capable of distinguishing the disorders of horses." At that time there was not a single qualified veterinarian in India and only two in England: Sainbel and Moorcroft. In 1799, five veterinary officers, trained at the Veterinary College, London, proceeded to India, but two of these were soon invalided home and little is known of their work. It appears that these veterinary officers were attached to British regiments serving in India.

From 1826, after Moorcroft's death had been confirmed, until 1832, the management of horse-breeding establishments was again under the control of infantry and cavalry officers but in 1832, in consequence of terrible losses from disease, the East India Company insisted upon veterinary surgeons forming part of the staff of the various depots and J. T. Hodgson appears to have been one of these and a man of considerable influence. From the Government horse-breeding stud at Hissar, in the Punjab, he was appointed to the Governor-General's Body-Guard at Calcutta, in 1821, and was directed to train assistant apothecaries—half-caste Indians—as veterinary surgeons for the troops of the Bengal Army. When qualified, these men were to be appointed sub-assistant veterinary surgeons with the pay and allowances of an apothecary. But in 1822, Hodgson warned the Bengal authorities that their scheme would not work, so the project came to nothing and in 1823 only three sub-assistant veterinary surgeons were borne on the establishment of the Army. In August of that year, Hodgson submitted to the Government of India a scheme for the creation of an organised veterinary service. His proposals were that the East India Company should provide a professor at the London College to deliver a course of lectures to candidates for the Indian Service on the breeding, rearing, management and diseases of horses, cattle and camels, and on shoeing, so that prior to proceeding to India, veterinarians should have expert knowledge of these matters. To these lectures the Company's civil, military and medical servants were to be admitted, should they desire to attend, and Hodgson considered this preferable to the arrangement made by Coleman to give lectures on veterinary matters to cadets at Woolwich. In regard to the organisation of veterinary services in India, Hodgson proposed an officer on the general staff of the Army in India, as principal veterinary surgeon; one veterinary officer each to the forces in the Presidencies of Bengal, Madras and Bombay, and an administrative officer to each Division, in addition to executive officers for brigades of horse artillery, regiments, cavalry, breeding studs and other departments of the Army provided with animals. He made provision for sickness and deaths, by having a certain number of supernumerary officers available in India, and drew up tables of pay and allowances; rules regarding promotion, leave and pensions, and formulated a set of veterinary regulations, but

his proposals appear never to have been acted upon.

In 1827, twelve veterinary surgeons came out to India and in 1828 a further 13, while subsequently, veterinarians were supplied as casualties occurred. The establishment in the three Presidencies in 1833 was 31. Recruits appear to have been selected by Mr. John Field of the 2nd Life Guards. They were intended for the care of Army animals but the Veterinary Department of India remained without an official head or a single administrative officer for 40 years. Thus the early veterinary work done in India appears to have been done by veterinary officers of British and Indian cavalry regiments and much valuable information was undoubtedly obtained regarding the diseases of domesticated animals in this country. For example in 1881, Griffith Evans, of the Army Veterinary Department, for the first time demonstrated a large flagellated organism—now known as *Trypanosoma evansi*—in the blood of horses and camels affected with surra, a previously little understood but well-known fatal disease of all classes of domesticated animals in India. Evans was born in Wales in 1835 and entered the Army Veterinary Service in 1860. He proceeded to Canada in 1861, with the Royal Artillery and while at Montreal graduated in medicine at the McGill University. His scientific enthusiasm was widely known and was referred to by Sir William Osler, Regius Professor of Medicine at Oxford, but Evans' report of his discovery was referred to the Sanitary Commission to the Government of India and was not accepted, while his findings were derided in certain quarters. They have, however, since proved to be an epoch-making advance in the knowledge of protozoan disease and have been of immense benefit to the human race as well as to their livestock.

The next important event in the advance of veterinary work in India was the recommendation of Hallen of the formation of an Indian Civil Veterinary Department with schools for the training of students. Hallen entered the service of the East India Company in 1850, joining the Bombay Veterinary Service and, in 1862, became Inspecting Veterinary Surgeon of the Bombay Army. He organised the veterinary service of that force and established an Army Veterinary School at Poona. In 1863 he was made Superintendent of the Stud Department of Bombay and from 1863 to 1868 was head of the Veterinary Service in the Abyssinian War. In 1869 his services were asked for by the Government of India, in connection with cattle plague and he became President of the Commission which sat until 1872. From 1872 to 1876 he was one of the Commissioners charged with the breaking up of the old Indian studs and he organised the horse-breeding operations of India, of which he was Superintendent. Finally, in 1892, he became Inspector-General of the Civil Veterinary Department of India. He was awarded the C.I.E.

The next personality of outstanding influence on veterinary developments in India was Colonel Pease, who by his energy and ability raised the Lahore School from very humble beginnings to an outstanding position. Among other activities, he translated text-books into Urdu, for the use of students, and lectured in that language. He conceived the formation of an Imperial Bacteriological Laboratory; originated and edited the *Journal of Tropical Veterinary Science*—with other enthusiasts among whom the names of J. H. Steel and F. Smith (afterwards Major-General Sir F. Smith) should be mentioned—and appears to have been the first to diagnose the existence of dourine in India. He also did valuable work on surra and, while actively engaged in the cattle survey of India, published a very valuable series of books on the breeds of Indian cattle.

The first veterinary school opened in India appears to have been that at Babugarh which was opened in 1874, a similar one being established about the same time at Rangoon. The Babugarh school was afterwards transferred to Lahore and formed the nucleus of the present college. Subsequently veterinary colleges were established at Bombay, Calcutta, Madras and at Ajmer (Merwara) but this last was afterwards closed and the staff merged in that of the Lahore Veterinary College. Later a Government Veterinary College was established at Patna and it is worthy of note that the colleges at Calcutta and Bombay were established as a result of private donations of large sums of money; in the first case by a wealthy zamindar and in the second by a well-known Parsi philanthropist.

In 1881 the Government of India offered a prize worth Rs. 200 for the best original paper on the horse disease commonly known as kumari or paraplegia and in 1883, with a view to encouraging the study of Veterinary Science, the Governor of Bengal offered two prizes, one of £50 and the other of £20; open to Army holders of agricultural scholarships from Bengal, who had studied at the Royal Agricultural College, Cirencester.

Thus the value of veterinary work gradually became established but even to-day the position of disease control in India is peculiar in that there are no veterinary practitioners, except a few in Calcutta and other big cities, and stock-owners are almost entirely dependent on Government veterinary services for veterinary aid. It is therefore incumbent upon Governments to organise and maintain suitable

provincial veterinary services, for the control of contagious disease and to provide veterinary aid and assistance in the proper care and management of livestock. In the early days, these services were mostly under the Director of Land Records and at that time there were no veterinary colleges in India. The obvious step for the advancement of Veterinary Science was therefore to establish suitable colleges or schools for the training of veterinarians in India and when graduates became available, provincial veterinary services were gradually organised—by officers transferred from the Army Veterinary Department to take charge of the newly formed Civil Veterinary Departments. Veterinary hospitals and dispensaries were opened at suitable centres and the work of the departments has gradually been developed and extended as more graduates have become available.

In most provinces, superior veterinary services were formed, officered by veterinarians with the M.R.C.V.S. or equivalent qualification and, in addition, subordinate services officered by graduates of Indian veterinary colleges.

An Imperial Veterinary Service was also formed but recruitment to this service ceased in 1924 and the number of fully qualified veterinarians in India remains far too small for the bare requirements of such a huge country. For example, the Royal Commission on Agriculture in India recommended 300 officers and 6,000 subordinate staff for British India but in 1936-37 the strength was only 109 and 1,646 respectively. Various proposals have been put forward for the establishment of an All-India Veterinary College, to train up to the M.R.C.V.S. standard, and the matter is now being dealt with. But as no such course was available in the country, the Government of India and Provincial Governments decided, in 1920, to give a limited number of scholarships to enable students to take the M.R.C.V.S. qualification in the United Kingdom. In addition a number of students have obtained this qualification at their own expense.

The scope for development of veterinary work in India is however immense, not only in the control and treatment of contagious and enzoötic disease, which is rife, but also in such animal husbandry matters as systematic control of breeding operations, and inoculation of improved stock against diseases combined with organised castration, at a suitable age, of inferior males not required as sires.

Owing to the general lack of wealthy landowners who take a genuine interest in livestock improvement this work is of the greatest importance and recently the Government of India has recommended that all animal husbandry work should be in the hands of Provincial and State Animal Husbandry Departments, based on the existing Provincial Veterinary Departments. At present this work is partly in the hands of Veterinary Departments and partly Agricultural Departments but it is clearly essential that veterinary graduates from Indian colleges should in any case be thoroughly grounded in animal husbandry subjects; particularly as there hardly exists in India an educated class of scientific stock breeders from which young men with hereditary knowledge and interest in livestock could be drawn for the control of breeding operations. Indians who have received veterinary training have already proved their superior value in such work and with a view to increasing existing facilities, particularly for training in animal husbandry, it has recently been recommended that a dairy should be maintained at every veterinary college in India and that the I.D.D. course should be open to veterinary graduates, after a reduced course of study in addition to what is given in their graduate course.

One of the most important steps ever taken for the development of veterinary work in India was the appointment in 1891 of an Imperial Bacteriologist, whose headquarters were in the first instance at Poona. After two years, it was decided to instal this officer at a Veterinary Research Laboratory at Muktesar, in the Kumaon Hills, "for the investigation of diseases of domesticated animals in all provinces in India." The first Imperial Bacteriologist was Lingard, a medical man, who among other things discovered the specific affinity of arsenic for the parasite of surra: a discovery which has led to results of the greatest importance to the human race. From the day of its establishment in the Kumaon Hills, where it was free to carry on systematic research in animal diseases of all kinds, the Muktesar Institute has built up a world reputation and has done an immense amount of work of the greatest value to Indian stock owners. The advances made by veterinary science in India during the past 25 years have been fully dealt with by Mr. Ware in a paper specially prepared for this meeting* and I will not attempt to discuss them in detail, but there are a few general remarks in regard to the control and treatment of disease in this country which I would like to make. The most important advance from the point of view of owners of livestock has undoubtedly been the great step forward which has been made in the control of rinderpest due to the general adoption of a system of vaccination with goat virus. This method has been evolved as a result of the continuous research and investigation, which has been carried on at Muktesar for many years, into all matters relating to rinderpest control. In the course

**See* Report Section of this issue.—*Editor.*

of this work Dr. J. T. Edwards produced a goat virus of fixed and reduced virulence for the ox and from this beginning a method of vaccination has been evolved there which has proved highly successful and economical in controlling outbreaks of rinderpest among plains cattle, without the use of anti-rinderpest serum. This discovery has made it possible to control outbreaks at fractional cost, compared with the cost of the serum simultaneous or serum alone methods, and at the same time to confer lasting immunity which, so far, has proved to be a solid one for as long as it has been possible to test it, *i.e.*, up to more than three years. For the poor cultivator of India, whose very life depends on his cattle, this is an immense boon and the fact of cattle plague being so comparatively easily and cheaply controllable has enabled Provincial Veterinary Departments to devote more attention to other fatal diseases such as haemorrhagic septicaemia, black quarter and anthrax. These still take a heavy toll of the cattle of India but are now better under control by means of biological products, evolved for the most part in other countries, and during the past five or six years great advance has been made in the treatment of surra as a result of research at Muktesar and systematic investigation carried out in the Punjab and other provinces. Great advance has also been made in the study and control of various forms of schistosomiasis, of which nasal granuloma is an important and often fatal manifestation, over large areas particularly in South India, and in the study of lesions of the skin and subcutaneous tissue due to larval forms of filaria. Progress has also been made in the study and treatment of diseases due to the great variety of piroplasmal organisms which are of great economic importance to India. The study of the protozoa pathogenic to livestock in India is however an immense subject, the fringe of which has hardly been touched, and far more requires to be done to obtain precise information regarding these organisms and the helminths by which livestock of all kinds are parasitised to an enormous extent throughout India.

The systematic disease investigation now carried on in all provinces and some of the large Indian States has moreover brought to light a number of disease conditions, due to malnutrition and other causes which were previously not understood, and has enabled steady advance to be made in the study and control of a great variety of diseases of stock of all kinds.

But the field for scientific veterinary work in India is immense and the fully trained workers are few. Meanwhile the poor ryot has to suffer continuous and heavy loss from a great number of causes which, with more and better trained staff and more adequate provision for combined veterinary and animal husbandry activities, could easily be brought under better control.

Some research is carried on at Indian veterinary colleges, notably at Lahore and Madras, and during the past five years provision has been made by the Imperial Council of Agricultural Research for systematic investigation of the disease of livestock, in provinces and States throughout India, by the provision of veterinary investigation officers paid by the Imperial Council of Agricultural Research. Though paid out of funds provided by the Imperial Council of Agricultural Research these officers are under the direct control of the Director of Veterinary Services of the province or State concerned and work in collaboration with the Muktesar Research Institute, or a veterinary college where suitable facilities for research exist.

There are in all five veterinary colleges in India, the longest established being the Punjab Veterinary College at Lahore, which was originally founded as an elementary school by Colonel J. H. B. Hallen at the Remount Depot, Babugarh. This Remount Depot was, however, abolished soon afterwards and in 1882 the veterinary school was transferred to Lahore with Colonel Kettlewell as the first Principal. In spite of its humble beginnings and very inadequate accommodation and equipment, this school has continued to make steady progress and has established its great value to livestock owners. The successive Principals of this College have been Colonel G. Kettlewell (1882-90), Colonel J. Nunn (1890-97), Colonel H. T. Pease (1897-1907 and 1912-19), Colonel A. Smith (1907-12), Colonel G. K. Walker (1919-26) and Mr. W. Taylor who at present holds this post.

The course of instruction was originally given in the vernacular and was of two years' duration but, in 1900, the period of the course was raised to three years and the name of the institution was changed to "The Punjab Veterinary College." In 1905, the veterinary school which had previously been established at Ajmer was abolished and its teaching staff was absorbed by the Punjab Veterinary College while in 1919 under Colonel Pease, new and commodious buildings and accommodation were provided which made the Lahore College an exceptionally well-equipped veterinary college, for training in all branches of Veterinary Science. At that time the course was still a three-year one but in 1919, during Colonel Walker's principalship, a four-year course in English was instituted and the Intermediate Examination of the Punjab University or equivalent test was made the educational standard for admssion to the College.

In August, 1886, a veterinary college was opened at Bombay in the S.P.C.A. Buildings

which, in 1883, had been presented by Bai Sakarbai Dinshaw Petit, a well-known Parsee philanthropist of Bombay city. The hospital buildings were handed over to Government and some additional buildings required for the use of the College were built afterwards.

The course of study at this College has been a three-year course in English since its foundation but the standard has varied considerably. J. H. Steel, the first Principal, originally aimed at obtaining recognition by the Royal College of Veterinary Surgeons and, with this object in view, drew up a syllabus for the advanced course which was brought into force in 1890. But Steel very unfortunately died, in January, 1891, and the syllabus drawn up by him, being considered too advanced, was modified and simplified. In 1900, a Conference of Principals of various Indian veterinary colleges and schools was held at Ambala and, as a result of this Conference, the written examinations at the Bombay Veterinary College were discontinued and the course was simplified and made uniform with the courses at that time given at the Bengal and Lahore Colleges, an oral test being the only test then applied. A simplified curriculum thus became the basis of all veterinary education in India and at first non-matriculate students were admitted, but later the educational standard was raised to matriculation at all veterinary colleges. This standard is still the standard of admission to the Bombay Veterinary College and the course is still a three-year one, in English. The Principals of this College from its inception have been Mr. J. H. Steel (1886-1891), Lieut.-Colonel James Brodie Mills (1892-1908), Major Frank Josler (1909-1910), Mr. K. Hewlett (1911-1930) and Mr. V. R. Phadke who at present holds this post.

The establishment of a veterinary college in Calcutta was first recommended by the Cattle Plague Commissioners, on the completion of their duties in 1871, and in the interim repeated proposals were made by the Inspecting Veterinary Surgeon, J. H. B. Hallen, to provide such a college. No action was, however, taken until 1891, when Babu Sheo Baksh Bagla generously gave Rs. 30,000 to Government in aid of the project and offered seven-and-a-quarter bighas of land for the site. Sir Dinshaw Monochjee Petit also promised a donation of Rs. 25,000 for the establishment of the hospital. The school was opened in January, 1894, and was subsequently raised to the status of a college in 1898. The first Principal was Colonel F. Raymond (1898-1912) followed by Colonel A. Smith (1913-1920) and Mr. A. D. MacGregor, the present Principal. The course of training at this college is a three-year course, in English.

As long ago as 1882, veterinary courses appear to have been given in Madras, at the School of Agriculture at Saidapet, by veterinary surgeon James Mills, A.V.D. The curriculum at that time embraced among other subjects, veterinary medicine and surgery and the course extended to three years. The present Madras College was opened in 1904 and has been extended from time to time by the provision of increased laboratory accommodation and facilities for carrying on research and the manufacture of biological products; while recently a small dairy has been established in connection with this College, with a view to providing increased facilities for the instruction of students in the care and management of animals in health.

The course is a three-year one in English and recently the College has become affiliated to the Madras University by which, after a short course of extra instruction, the degree of B.Sc. (Veterinary) is granted to successful candidates. The Principals of this College have been Major W. D. Gunn (1904-1908), Mr. D. A. D. Aitchison (1909-1925), Mr. F. Ware (1925-1927), Mr. P. T. Saunders (1927-30), and Mr. T. J. Hurley who at present holds this post.

In 1930 a veterinary college was opened at Patna. The establishment of this college was the work of Mr. D. Quinlan, the then D.V.S., Bihar and Orissa, and it is fortunate that he had the vision to establish an extensive farm at which cattle breeding and dairying can be carried on and made use of for the grounding of veterinary students in the care and management of cattle, which is so essential to the training of veterinary students in India. The course is a three-year one in English and the minimum educational qualification laid down for admission to the college is matriculation. The Principal of this college since its institution has been Mr. R. T. Davis.

Thus there are five veterinary colleges still in existence in India, but the staff and facilities provided for veterinary training in this huge country are still very inadequate, even for training up to the comparatively low standards which are accepted as sufficient for veterinary graduation.

The provision of a central veterinary college, to provide training up to the M.R.C.V.S. standard and in research, in conjunction with the Veterinary Research Institutes of Izatnagar and Muktesar, is being taken up by the Government of India but more fully qualified staff and better facilities for research and animal husbandry training are urgently needed at most of the existing colleges, to enable them to train up to modern standards and to carry out such diagnostic work and research as can suitably be undertaken at such colleges.

This has become all the more necessary since the provision by the Imperial Council of Agricultural Research of Veterinary Investigating Staff, in each major province and certain States, which it is now proposed to extend and develop for the systematic investigation of disease problems all over the country which is so urgently needed. This investigation work has increased the demand for co-ordinated veterinary research.

The field for such work is unlimited and up to the present almost untouched but, for such work, high standards of education and veterinary training are needed and I appeal to Indian veterinary institutions of all kinds to aim constantly at producing veterinarians fully equipped for such work and able to take the predominant place in animal husbandry work for which their training under Indian conditions and daily experience should form the best background. The low standards of education and training which are now commonly accepted for Indian veterinary graduates will never provide the highly trained veterinary services which are essential for the proper study and control of disease and for systematic improvement of livestock in this sub-continent, and if the veterinary profession aspires to take its proper place and to justify higher scales of pay it will have to insist on raising its standards, at least as regards selected students, to the levels which have now been adopted in all progressive countries. Low standard of education and training can only mean low status and low scales of pay.

THE NEED FOR A DRUGS BILL IN INDIA

The President of the Indian Medical Association has approached the premiers of all the provinces in India with the request that they move the Government of India to put forward a Bill in the Central Assembly with a view to controlling the import of foreign drugs in India, as well as the manufacture, storage and sale of drugs in India. The Import of Drugs Bill, on which a Select Committee recently reported adversely, is not considered by the Association to provide sufficient safeguards against spurious and adulterated drugs. Apparently the Government of India cannot bring forward a Bill of the wide scope which appears to be necessary unless the provinces simultaneously pass Acts to control the manufacture, storage and sale of drugs in their own jurisdictions, leaving the Central Assembly to deal with imported drugs, or unless the provinces request the Central Assembly to take the matter up and ask for a comprehensive Act.

On the Existence of Haemorrhagic Septicaemia in the British Isles

A Criticism of the Present Position, with an Account of Investigations into the Problem in the Northumbrian Area.

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Is haemorrhagic septicaemia of bovine stock in Britain a disease entity, which can be accepted by clinician, pathologist, and epizoötiologist alike? Pathologists, in the majority, will regard this question with scepticism.

Several years have elapsed since Gaiger denied the existence of haemorrhagic septicaemia in the British Isles. Years of silence have stilled a controversy which, in the mind of the writer, should have been brought to a definite conclusion. That silence appears to have set the seal on a verdict which has been accepted as authoritative and practically binding on veterinary opinion. It is well, however, periodically to examine an accepted statement and shed on it the light of accumulated experience. The pathologist has said that haemorrhagic septicaemia—we shall proffer the term for the present—does not exist. Yet the voice of the bewildered clinician can be heard—and in recent years more audibly—uttering the forbidden words. He is convinced that he is confronted with a peculiar type of disease, chiefly pneumonic or septicaemic, which is essentially different from anything in his experience of disease in young bovines. He is certain, on clinical grounds alone, that, in certain outbreaks of pneumonia in calves, and occasionally more mature animals, the syndrome, the entire picture of the disease and its pathological manifestations are not comparable with the more straightforward and usually uncomplicated sporadic cases of pneumonia that he encounters in practice. Perplexed, he turns to the more classic descriptions of disease.

In most standard text books of animal pathology a disease of the nature affecting animals under his care is adequately described, or adequately up to a point, but the essential etiology is missing, or hinted at, with vague reference to pasteurella organisms being of some doubtful significance. In the mind of the writer much of the confusion surrounding this disease has arisen through loose definitions, inaccuracy of observation and unwarranted assumptions based on these observations. We must, there-

fore, define our position primarily on the grounds of clinical pathology, later basing our etiological judgment and decisions on scientific data emerging from our attempts to unravel the disease problem as a whole.

It would, therefore, appear necessary to define the disease which has aroused such a diversity of opinion on the existence of haemorrhagic septicaemia in Britain.

All descriptions of the disease concentrate on thoracic lesions, other lesions being considered of little importance. The thoracic form of authentic haemorrhagic septicaemia is described by Hutyra and Marek as follows: "In the pectoral (thoracic) form, the thoracic cavity contains serous or serofibrinous exudate which is sometimes mixed with blood. The pleura is inflamed and studded with small haemorrhages, especially the visceral layer which appears to be covered with fibrinous membranes. In one or both lungs, smaller or larger connecting parts are hepatized and friable. The cut surfaces are uniformly dark, brownish or reddish in colour, finely granular and contain, in less acute cases, small dry caseous areas. Sometimes the interlobular connective tissue septa appear thickened and yellowish white through serous infiltration, so that cut surface of the lung has a mottled, marbled appearance—the appearance of the lung in such cases is very similar to the lungs in contagious pleuro-pneumonia."

This passage is quoted verbatim since it is a precise and complete description of the lung in cattle affected with haemorrhagic septicaemia in India, of which the writer has considerable experience. It might be convenient to add to this description the haemorrhages which frequently occur on the epicardium, and not infrequently within the endocardium, always at the junction of the chordae tendinae with the papillary muscle: the gelatinous infiltration of varying extent in the larygeal region.

Apart from the acute type of the disease, a more chronic form is summed up in the words of Carrougeau: "The disease may take a chronic course. The emaciated feverless animals cough frequently—a persistent diarrhoea is present in which faeces mixed with blood are passed—the disease may terminate in recovery, but in such cases the cough may persist for a long time—the autopsy of such animals reveals caseated areas in the lungs, chronic catarrh of the stomach and intestines, enlargement of the lymph glands."

If we accept these lesions as being typical of the pectoral form of haemorrhagic septicaemia, then there exists in Britain a disease with similar pathological identities, and it must be further pointed out, to stress the analogy, that in no case of non-specific sporadic bronchopneumonia can such lesions be observed. On clinical grounds, the analogy can be maintained. The clinical syndrome is expressed in the following terms: a sudden sharp rise of temperature with marked respiratory distress and death occasionally within 24 hours, more frequently the third to sixth day—the latter cases complicated by symptoms of diarrhoea, occasionally blood tinged. A certain number of cases lapse into a chronicity or are insidious and chronic from the outset, conforming to the description of Carrougeau. Epizoötic factors are, or appear to be, sudden chill, change of food—any factor, in other words, which lowers the animal's metabolism and predisposes it to chill, which is the *force majeure*.

The existence of this disease was brought to the writer's notice in 1926 when he was asked to investigate a disease of young stock which had been causing considerable trouble and loss, over many years, in the Alnwick area. The symptoms were those of a suddenly developing, acute and fulminating pneumonia, the affected animal being perfectly well at night and critically ill in the morning. Young stock were chiefly affected and it was reported that when the disease appeared in calves, it was usually peracute with a rapidly fatal termination. The temperature in these cases was septicaemic in type, varying between 105-108° F., running up rapidly to a climax where the animal succumbed or abating somewhat on alleviation of the acute symptoms, but never falling lower than 104° F. with an occasional sharp upward trend. Animals in the latter category—the acute stage as opposed to the peracute—died in the majority of cases. Those that exceptionally survived proceeded uncertainly—with, in some cases, a sudden exacerbation terminating abruptly and fatally—to a protracted chronicity. In the less acute cases, the temperature fluctuated around 104° F., giving one the impression of a septicaemic process held in check by the animal's natural powers of resistance.

The stance of affected animals is peculiarly typical of the affection. Very acute distress is evidenced. The animal stands with its forelimbs widely straddled, head thrust forward and upward, the respiration being convulsive. Swelling of the subcutaneous tissues of the throat region is characteristic. In a batch of animals of similar origin, usually young store cattle, we may find several which exhibit a fluctuating temperature, sudden in onset, a dry harsh cough accompanied by a scanty frothy mucus—cases which might reasonably be diagnosed as a frank broncho-pneumonia with, however, this difference. They rarely, if ever, tend to resolution and recovery, proceeding rather to an exacerbation of symptoms terminating in an acute septicaemia, or, more frequently, to an exhibition of symptoms referable to a chronic interstitial type of pneumonia complicated by sepsis.

On *post-mortem* examination of all types of cases the essential and predominating lesions are those of pneumonia. In acute cases, an acute fibrous pleuro-pneumonia is present, with a considerable volume of yellowish fluid exudate containing fibrinous flocculi in the pleural sac. The parietal and visceral pleura are coated with a semi-coagulated sticky fibrinous or gelatinous exudate on removal of which the membranes are found studded with petechiae and ecchymoses.

The lesions of pneumonia involve the entire lungs, so that the genesis of the pathological process is masked. In one or two very early cases, the initiation of the process appeared apical spreading posteriorly. There was no evidence of an inflammatory process affecting the terminal bronchioles with surface and somewhat discrete lesions as would occur in a simple sporadic broncho-pneumonia. The histological impression was that the origin of the process was a blood stream infection spreading along the capillary supply of the bronchial system and independent, *ab initio*, on involvement of the bronchial epithelium. The cut surface of the lung is typical. The interstitium is widely distended by a gelatinous infiltration, the lobules being sharply demarcated and in a stage of red hepatization. In less acute cases, the lung picture is more typical. The lobules show stages of pneumonia varying between acute primary congestion and stages of hepatization to those in which central necrosis is evident and the commencing hyperplasia on part of the interstitium confers on the pathological picture an appearance not unlike that of contagious bovine pleuro-pneumonia. In chronic cases the pathological process has evidently advanced to a change in which necrosis has been followed by suppuration and those sequelae associated with a chronic suppurative broncho-pneumonia. The acute cases always show involvement of the gastro-intestinal tract, abomasitis, with prominent petechiae and a well defined inflammation of the intestinal mucosa throughout. Petechiae are numerous on the spleen capsule, and the systemic lymph glands are oedematous and petechiated, occasionally haemorrhagic. The *post-mortem* features are consistent with septicaemia.

A complete bacteriological examination of a yearling destroyed in the acute phase of the disease, considered to be representative of the majority of the animals affected, afforded the following data :—

Typical bipolar organisms, conforming morphologically with *P. boviseptica* were observed, though very scantily, in Leishman and Loeffler stained blood films. Films prepared from an area of hepatized lung, mediastinal and cervical lymph glands were swarming, the films looking like a pure culture preparation. The same organism was present in numbers in the spleen, liver and mesenteric as well as systemic lymph glands. The organism was easily cultivable from all these tissues, from the peripheral blood stream, and from the sero-fibrinous exudate in the thoracic cavity. The inevitable postulate eventuating from these findings was that the disease is septicaemic in its acute phase and that associated with this septicaemia is an organism, a known cause of cattle septicaemia, which was recoverable from the peripheral blood stream—prior to death, considering death as due to destruction and not the outcome of the disease process. In other words the conditions of the examination precluded even the remotest possibility of bacteriological fallacies incurred through blood stream invasion of adventitious, potentially pathogenic organisms.

This organism was eventually classified as a true pasteurella conforming in type species to Group I (Jones). Unfortunately, rabbits were not directly inoculated with blood from the *post-mortem* subject as facilities were not available and it was not until several subcultivations had been made that such tests were performed. The organism proved non-pathogenic for rabbits. An attempt was made to secure calves from the scene of outbreak for experimental inoculation. This was not possible.

An interesting and not entirely irrelevant observation emerged from the attempted transmission experiments. Failing suitable subjects, the veterinary surgeon in whose area the disease was investigated decided to use the living cultures supplied by the laboratory on an animal which had been ailing for several months, a case of protracted broncho-pneumonia. He fed and subcutaneously inoculated massive doses of the culture and later reported that the effects of his "experiment" were remarkable. Within a week or two of the administration, the animal which had been marked down for destruction suddenly commenced to put on condition and was shortly able to command a price from the butcher. No further observations were made in the Alnwick area, the writer proceeding to India shortly after the events recounted.

In 1930, Tweed and Edington published a paper on a form of pneumonia affecting chiefly calves and yearlings which, on account of its special type, they accorded a pathological and bacteriological investigation. The conclusion of their work was that "there is a type of bovine pneumonia in England which is due to infection with a pasturella boviseptica belonging to Jones Group I." This contention was immediately called to question and severe criticism by Gaiger who advanced reasons, based on his Indian experience, to show that true haemorrhagic septicaemia does not occur in the British Isles. It is

worth while examining the evidence on both sides in an attempt to clarify the position. The argument appears, unfortunately, to have been waged around the use of the term haemorrhagic septicaemia. If the term pasteurellosis had been adhered to, and the argument defined in terms of that infection, there need have arisen none of that confusion which obscured the situation and remains with us at present. No one would disagree with Gaiger when he states that haemorrhagic septicaemia—as seen in India—does not occur in Britain, nor could anyone, on the evidence adduced, disagree with Tweed and Edington when they state that the form of bovine pneumonia which they investigated was a form of pasteurellosis. Between the extreme ranges of expression of pasteurellosis there exist—even in India—grades of infection which determine the type of disease. The term haemorrhagic septicaemia represents the extreme type in which the animal succumbs within a few hours, *i.e.*, a rapidly fatal septicaemia characterised by haemorrhages or petechiae. At the other extreme are types of infections in which the disease is not so fatal, in which a majority of animals recover, and in which the disease appears chiefly thoracic, although gastro-enteritis is consistently, if not strikingly, present. The disease described by Lignières as "entéqué" appears a further example of a disease caused by pasteurella organisms in which there is an insidiousness, an extreme mildness of symptoms and fatal effects in comparison with the raging virulent disease which has rightly earned the apt term haemorrhagic septicaemia. By no stretch of the imagination could the less virulent outbreaks of pasteurellosis in India, or "entéqué" be termed septicaemia.

All forms of true pasteurellosis possess, however, one feature in common. These are haemorrhages or petechiae, which are evident in well known sites. If Gaiger had said that bovine pasteurellosis does not exist in Britain, the situation would have been much clearer. He maintained that the disease recorded by Tweed and Edington, obviously a disease similar to that recorded by the writer, could not be haemorrhagic septicaemia—because the organisms of haemorrhagic septicaemia could not be isolated in purity from the blood stream of affected cases. Although it is true that pasteurella could not be isolated from the blood stream of *all* cases, they were isolated from the blood stream of two of Tweed and Edington's experimental cases and it must be remembered that they were working with pathological tissués and not with clinical cases. In the clinical case described by the writer, true pasteurella were easily cultivable from the blood. Nor is this a unique instance. As long ago as 1896, M'Fadyean investigated a septicaemic disease of two- to four-months-old calves which were perfectly well in the evening but critically ill in the morning, a disease which, on symptomatology, was identical with that under review. One of the characteristic features of this disease was swelling of the head and throat. Nine calves died and a pasteurella was readily isolated. A rabbit inoculated with blood from one case died from septicaemia within 24 hours and showed swarming bipolars in its blood at death. In an experimental calf inoculated after the same fashion, a large oedematous area formed, the animal surviving the inoculation.

Gaiger stresses the importance of gastro-intestinal lesions in true haemorrhagic septicaemia. He states that, even in the thoracic form, a diffuse haemorrhagic gastro-enteritis should exist, extending from abomasum to anus. Tweed and Edington, as well as the writer, noted the intestines inflamed and ulcerated. Are not the degree and the extent to which the alimentary tract is affected dependent on the degree and severity of the infection and the response of the animal to it? In any virulent septicaemic disease (*e.g.* anthrax), in which there is a complete collapse of resistance, a haemorrhagic gastro-enteritis is of certain occurrence. The greater the degree of balance between the infection and the tissue resistance, the less acute will be the lesions produced.

Tweed and Edington described the appearance of the endocardium as normal and Gaiger, very rightly, states that one of the characteristic features of haemorrhagic septicaemia is a marked endocarditis. Whatever the experience of Tweed and Edington may have been, the writer is satisfied that one of the particular and constant lesions of the disease is the presence of haemorrhages, however minute, within the endocardium. That a more picturesque haemorrhagic endocarditis is not present is explained on the same grounds that an intense haemorrhagic gastro-enteritis is absent.

The organism isolated by Tweed and Edington was apathogenic for rabbits and reproduced disease in only two of the calves inoculated. It was, in fact, a Group I pasteurella the feeble virulence of which is well established, under experimental conditions. The differences in the types of lesions caused by a type I and a type III pasteurella are, as has already been pointed out, differences of degree and not of kind, and determined by comparative virulence. Too much stress has been laid on the fact that the organism isolated by Tweed and Edington was incapable of reproducing the disease in experimental subjects with an invariability that proved its primarily pathogenic role. In Gaiger's opinion the pasteurella organisms described were adventitious in their origin, and not of primary pathogenic importance. This appears a debatable statement when, on clinical grounds, a disease of syndrome similar to bovine pasteurellosis was encountered and from that disease a true pasteurella was isolated, not only from the significant lesions of the disease, but from the peripheral blood stream, in the pre-moribund phase, thus indicating a true septicaemic condition normally associated with pasteurella infections.

Gaiger goes on to state: "The organisms studied by the writers mentioned (Tweed and Edington) seem more likely to be strains of pasteurella *normally present* in the respiratory tract, which have been able to invade lung tissue when the host's resistance has been lowered by journeyings, by road and rail, improper housing, feeding and hygienic conditions generally." The generalisation that true pasteurella conforming to any of Jones' groups are *normally* present in the respiratory tract is open to doubt. It is a statement that is contrary to the writer's bacteriological experience. In Indian cattle dying from pneumonia of non-specific type, a bovine pasteurella has been isolated from the lungs in only 16·5 per cent. of cases. This figure corresponds closely with the findings of Andrieu, Quiroga and Egcuira who, working in the Argentine, found 17 out of 110 cattle normally harbouring organisms of the pasteurella group in the respiratory tract, *i.e.*, 15·4 per cent.

The scepticism that has been directed against the acceptance of bovine pasteurellosis in British cattle appears to have originated from incomplete or inconclusive experimental data. In most cases, diagnosis has depended on the discovery of pasteurella-like organisms in the lungs, which are the organs chiefly affected. It has been considered true that pasteurella are normally found in tissue films prepared from practically any pneumonic bovine lung. Exception has already been taken to this statement. A few odd pasteurella-like organisms may be found. These are, however, not typically *ovoid* and *bipolar*. They are more bacillary in form, coccoid and quite unlike a true pasteurella morphologically. Moreover, no comparison is possible between a film prepared from a case of sporadic broncho-pneumonia showing such forms and one prepared from a lung affected with the disease in question. In the latter case, the organisms are swarming, are typically ovoid and bipolar and conform in every morphological—and cultural—respect to a true pasteurella. The contention that these organisms are of secondary importance is disposed of by the fact that, in an animal slaughtered at the height of the disease, the same organisms were visible in the peripheral blood and easily cultured in purity. This fact, also noted by Tweed and Edington in two of their artificially inoculated calves, places beyond doubt the contention that a Group I Jones pasteurella is the direct cause of a septicaemia of cattle, and as the lung—and other—lesions described are those normally encountered in subacute outbreaks associated with pasteurella belonging to more virulent strains (Jones Group III), the proof seems complete. It may be contended in such an *a priori* argument that the proof is not complete, that a vital link in the evidence is missing. It has not been consistently possible to reproduce the disease, certainly not in its pneumonic form, by the inoculation of the suspected organism in susceptible experimental animals. Koch's postulates have not been satisfied, and it appears that on this point much of the scepticism has been centred. What modern bacteriologist would slavishly adhere to the generalisation of these postulates ? One need neither reflect very deeply nor possess within one's grasp the entire ambit of bacteriological science to realise that there are quite a few bacterial diseases which cannot be produced at will by organisms of commonly accepted primary pathogenic qualities (*e.g.*, lamb dysentery, braxy, pulpy kidney disease). Modern concepts of disease should—and indeed tend to—concentrate on those accessory factors which contribute to a successful infection, and should correspondingly devaluate the comparative virulence of bacterial groups or strains. One has not far to seek for such accessory factors in the disease under review.

" The animal experiments of Duerck, Aufrecht and Jerierski have thrown some light on the significance of cold in the origin of pneumonia and diseases of the organs in general. Following a partial or general chilling of the surface of the body, small thrombi are formed in the blood vessels of the lungs, due to a coagulation of the fibrin, and the permeability of the capillaries is increased also in other organs (pharynx, larynx and mucosa of the trachea), probably as a further result of the colloidal changes in the cells in the region of the chilling, as described by Schod.

Accordingly, small haemorrhagic foci will be found, which may be of larger size in the lung tissue. Due to disturbed circulation of the blood and the simultaneously impaired capillaries, the resistance of the lung tissue with respect to the micro-organisms is greatly decreased, while the escaped blood forms a favourable medium for their multiplication. Duerck always found bacteria in the inflamed lung tissue resulting from artificial chilling of the body."

When the syndrome of chill is correlated with the known presence of pasteurella organisms (Group I Jones) in a *minority* of young bovines, it does not appear irrational to invest these organisms with pathogenic properties, especially when there appears an early invasion of the blood stream, and more especially when no other, more direct, cause can be attributed to the pneumonic process. The fact that only a few animals of a number of young stock are affected during an outbreak, would be accounted for by the observation that only a few animals, out of a normal population, are carriers of the infection and therefore potential victims of the disease.

Conclusions

The present position concerning the existence of haemorrhagic septicaemia in British cattle is discussed and evidence is adduced to show that this disease, which should more correctly be termed bovine pasteurellosis, exists in both septicaemic and pneumonic forms in certain areas of Northumberland.

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The Bishop of Carlisle, presiding at the opening of the "Friends of the Lake District" Exhibition, referred to the shepherds as carrying on one of the most noble occupations in the world, yet some had been turned out from Eskdale by the Afforestation Scheme. The shepherds were there and for centuries they had been leading that life, continued the Bishop. He wanted the shepherds, at all costs, to be preserved.

CLINICAL COMMUNICATIONS

Epizootic Bovine Pasteurellosis in Great Britain

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It is generally thought that bovine pasteurellosis as a haemorrhagic septicaemia is seen in this country as a sporadic disease only. That it can occur as an epizoötic disease of some clinical importance is suggested by observations upon the following outbreaks:—

Case Report.

A mixed herd of 212 cattle comprised of cows, first-calf heifers, in-calf heifers, and calves. Of these animals, two heifers were found dead, and nine others very ill on September 12th, 1937. Three others had died a day or two previously.

History.—Some of the herd at the onset of symptoms, about three weeks previously, were coughing in a manner suggestive of husk. Consequent upon this, they were treated by an unqualified practitioner for husk, by drenching, and appeared to derive benefit. Nevertheless, the afore-mentioned deaths together with the general state of the herd, created a situation of such urgency as to call for other opinion.

Examination revealed quickened, short, painful respiration, dejection, and painful stiffness of movement. A history of diarrhoea, followed by constipation, was elucidated. Vegetable poisoning was suspected. The pastures, which were low-lying and very marshy, were carefully examined in view of this suspicion, but with negative results.

Post-mortem examination was next carried out upon two heifers. No significant lesion was demonstrated in either of these, other than those found in the lungs. On section, a marbled appearance, suggestive of contagious bovine pleuro-pneumonia was observed, but as no case of the latter disease had been reported in this country since 1898, special caution was exercised in order to eliminate the possibility of error. Smears were next taken from the lungs, spleen, liver and small intestine, and stained 1 per cent. methylene blue, by Gram's method and by carbol-fuchsin, and examined microscopically for the pasteurella organism—this organism being known to produce a lung lesion very similar to that in contagious bovine pleuro-pneumonia. Vast numbers of pasteurella were observed, with typical bi-polar staining, in all smears. No other organism was apparent with the exception of a short chain or two of rod-shaped bacilli which may have been of the Clostridium group.

Consequent upon these findings a fresh set of specimens was sent to the Ministry of Agriculture Laboratories for examination and report. Meantime a telegram was despatched to Messrs. Parke, Davis and Company, who were kind enough to return immediately a haemorrhagic septicaemia bacterin. This bacterin is a suspension of *Pasteurella boviseptica*, *Pasteurella oviseptica*, and *Pasteurella suiseptica*, grown in pure culture on suitable media, the organisms being killed by chemical means and standardised by count. The dose is 2 c.c. to 4 c.c. according to the size of the animal, administered by subcutaneous injection. This may be repeated every two or three days.

This, together with general nursing formed the only treatment. The immediate response of the herd to this form of treatment and its efficacy was such that it appeared unwarranted to change to the more expensive hyperimmune serum as was at one time contemplated.

On September 14th, two days after first seeing the herd, several more heifers and calves were now showing signs of the acute phase of the disease: temperature 105° F. and 107° F., dyspnoea, constipation, and general malaise following earlier diarrhoea. As a prophylactic measure, 50 of the herd, including cows, heifers and calves, were given 5 c.c. of the bacterin subcutaneously.

On September 15th a *post-mortem* examination was performed upon another heifer, revealing the same lung condition previously observed. A portion of mediastinal gland and lung, together with a long bone were dispatched to the Ministry of Agriculture. By this time the disease appeared to be spreading rapidly, and some of the originally acute cases had succumbed. It was therefore decided to give all the in-contacts 5 c.c. of the bacterin by subcutaneous injection, as well as a second and larger dose of 6 c.c. or 8 c.c. to the obviously affected animals which had so far survived and, indeed, appeared to be holding their own against the disease.

On September 20th, another calf died, and the *post-mortem* findings were practically the same as those of the previous cases except that the lungs were affected to a slightly lesser degree. From this calf, specimens including the femur were taken, and blood samples from some of the heifers that were still acutely ill, and submitted to the Armstrong College, Newcastle.

It was, however, now apparent that the acuteness of the disease was abating, but a third injection of 6 c.c. of bacterin was given to a number of calves and heifers that appeared to be slow in recovering. A few days after it was seen that these latter animals were also

H. KIRK: HYDROPERICARDIUM IN A DOG

Radiograph by H. Kirk.

shaking off the disease, and showing interest in feeding again. From that time, all the remaining affected animals began to put on flesh and do well.

The Ministry of Agriculture report confirmed the presence of bi-polar organisms in practically all the material submitted. The material was of low pathogenicity for rabbits, but examination of blood smears from rabbits so killed revealed the presence of pasteurella organisms.

Until October 28th, the disease had apparently been quiescent, when one heifer which had, early in the outbreak, received a prophylactic dose of the bacterin, showed symptoms of a recurrence of the condition, as also did a young calf which had been recently introduced into the herd. Their temperatures were both 105° F. They were then given 5 c.c. of the bacterin and have since recovered.

SUMMARY.

(1) This herd was composed of cows, in-calf heifers, first-calf heifers, and calves, obtained from widely different parts of the country, which were being reared on the heifers.

(2) A thorough search of the lungs, both macroscopically and microscopically, failed to show the presence of strongyles either as eggs, larvae or adults.

(3) The rapidity with which the outbreak spread amongst the younger calves which had never been out at pasture, were being fed upon the best food, and were in prime condition would again appear to be inconsistent with strongyles as a predisposing cause.

(4) With the exception of the first few cases showing the husky cough, the initial onset of the disease occurred suddenly whilst the animals were housed in very unhygienic sheds and strawyards.

(5) The average course of the disease appeared to be about three weeks.

(6) The total number of deaths was ten heifers, and ten twelve-weeks-old calves, out of an affected herd of 212 animals, and they were amongst the early acute cases.

. . . . .

Since this article was written, three more outbreaks have been seen in the same district, and have been found to be caused by the same organism.

(*a*) Fifty-seven cattle sent down from Penrith soon became affected, two dying, and the rest showing the same symptoms as the above case. Even the husky cough was present.

The cattle were all given 5 c.c. of the bacterin, which appears to have been effective.

(*b*) Out of nine twelve-weeks-old calves two were found dead. The *post-mortem* examination showed similar lungs as in the first case, but the calves were not affected quite so acutely. Bi-polar organisms were found to be very numerous in the material from the lungs.

Haemorrhagic septicaemia bacterin in doses of 5 c.c. was given and the diet was changed from straw chaff, a few oats and sugar beet pulp, to a more nutritious ration. They have since recovered completely.

(*c*) This case is of seven heifers which had been moved in February from the farm concerned in the big outbreak previously recorded. They became ill soon after September 12th, all showing a husky cough, but one was much worse than the others.

The bacterin in doses of 5 c.c. was given to each animal, and they have all since recovered.

* * * * *

Hydropericardium in a Dog

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A two-year-old fox terrier which was known to have swallowed a bone some days earlier, was presented to me by a practitioner for a radiographic diagnosis, as it was thought that the bone was lodged in the thoracic oesophagus.

The animal's respirations were very rapid (78) and distressed, a condition which had existed for three days. Temperature was 101·2° and pulse feeble. The heart sounds were very muffled and there was a great increase of pulmonary sounds over most of both lungs.

A ventro-dorsal radiograph revealed marked enlargement of the heart shadow which, as may be observed, reached nearly to the ribs on either side. The shadow was more rounded than usual, and showed posteriorly a bulging or irregular contour which has previously been noticed in association with hydropericardium. This was, in fact, the diagnosis and it was strengthened by the absence of local pain, friction sounds, or fever, factors which seemed also to exclude pleurisy or pericarditis with exudate.

The film showed (at arrow heads) some areas of apparent consolidation of lung, and it was thought that the hydropericardium arose in consequence of a chronic pulmonary condition. No foreign body was observed. Fluid in the pericardial sac is said only to represent a phenomenon of some other affection which must be discovered and treated.

I gave an intramuscular injection, at once, of coramine and suggested to my colleague that this might with advantage be repeated twice daily.

There was definite improvement in a quarter of an hour, and I heard later that most of the symptoms seemed to have permanently abated after a further two days. It appeared certain that death must soon have followed such severe and prolonged dyspnoea, had not the heart been reinforced.

ANNOTATION

The Chemotherapy of Bacterial Infections

In the three years which have elapsed since the discovery of the anti-streptococcal action of prontosil, nearly 1,000 publications dealing with the chemotherapy of bacterial infections by drugs of the azo series have appeared in medical and scientific literature. Unfortunately, much of this recorded work is either so uncritical or, in many cases, even misleading that it is difficult for anyone but the expert to have any clear idea of the most important experimental and clinical facts relating to the use of these drugs. A recent review* by Professor Garrod dealing with 166 of the more important publications describes the position of chemotherapy with sulphonamide and its related compounds as far as it is known at the present day. In a masterly survey he discusses absorption and excretion, choice of compound and dosage, and the therapeutic action of this group of drugs on streptococcal and other infections, their use in prophylaxis, their local application and their toxic effects.

It will be recalled that the first of the azo series of drugs to be brought to the notice of the medical world was prontosil. Subsequently, it was shown that prontosil owed its action on streptococci to the liberation in the body of a substance known as p-aminobenzene sulphonamide (first abbreviated to "sulphonamide" but now known as "sulphanilamide"). Sulphanilamide, which was not protected by patents, soon came to be manufactured on a large scale in many countries and sold under a variety of different names. Professor Garrod rightly deprecates this multiplicity of proprietary names and the confusion which has arisen from them. The following list of products which have been widely used in human therapeutics should prove useful to the veterinary practitioner in identifying the substances with which he is dealing:—

Prontosil (originally known as streptozon; subsequently as prontosil rubrum, prontosil flavum, or prontosil).—4′-sulphamido-2: 4-diaminoazobenzene hydrochloride. Given by mouth only; the preparation with which many early studies were done, but now much less often used.

Soluble Prontosil (prontosil solubile: marketed by one firm in U.S.A. as prontosil).—The disodium salt of 4′-sulphonamide-phenyl-azo-I-ozy-7-acetylamino-naphthalin-3: 6-disulphurous acid.

Rubiazol.—The French equivalent of prontosil had originally the same composition, but the name now denotes a compound with an added COOH group.

Sulphanilamide: p-aminobenzene sulphonamide. (Marketed as sulphanilamide, prontosil album, sulphonamide-P, streptocide, prontylin, colsulanyde, sulphamidyl, etc.).—Given by mouth, by subcutaneous injection and intrathecally.

Three other newer compounds which have been used clinically are:—

Proseptasine: p-benylaminobenzene sulphonamide.—Said to be less toxic than sulphanilamide.

Soluseptasine: disodium-p (γ-phenyl-propylamino) benzenesulphonamide-χ-γ-disulphonate.

Uleron (DB.90, diseptal, uliron).—Said to be more efficient against staphylococcal infections than sulphanilamide).

Although these latter three compounds are chemically related to sulphanilamide, it should not be assumed that they will always act in the same way as the former drug.

Absorption, Excretion and Dosage

For the correct therapeutic usage of any drug it is necessary that certain facts regarding its absorption into the circulation and its rate of excretion be understood. It has been shown that sulphanilamide is rapidly absorbed into the blood stream when given either orally or subcutaneously. Reaching a peak in about three hours, the concentration falls to almost zero in 24 hours; this means that a fully adequate amount for therapeutic action persists after any single dose for about six hours. Since, therefore, persistence in the blood is clearly an important factor in success, the drug must be administered at four- or six-hourly intervals in order to maintain an adequate concentration in the body. It would appear from the work of Marshall and his colleagues in America that after administration, sulphanilamide becomes evenly distributed in all the body tissues except bone and fat, and reaches a concentration only slightly below that in the blood. Sulphanilamide is wholly excreted in the urine. Excretion is delayed when the kidneys are previously damaged. The general behaviour of all these compounds in the body is probably similar but studies with any compound other than sulphanilamide have not been published.

In human medicine it has been found that sulphanilamide is the most generally useful of this series of drugs and that oral administration, when feasible, serves all purposes except the immediate treatment of meningitis. An 0·8 per cent. solution in saline may be given subcutaneously when swallowing or alimentary absorption is at fault. Prontosil soluble should be given intramuscularly; intravenous or intrathecal injection of this compound is dangerous.

Lancet, 234, 1125 to 1129 and 1178 to 1182.

The general scheme of dosage and the lines on which it should proceed in the human subject are discussed. A suitable daily dosage is 1 g. sulphanilamide per 20 lb. body-weight (maximum 5 g.) or 1 c.cm. prontosil soluble (2·5 per cent. solution) per 1 lb. (maximum 120 c.cm.). These maximum doses should be stepped down at two- or three-day intervals in favourable cases. Professor Garrod is of the opinion that the course of treatment should be limited to ten days and resuming it, if necessary, after an interval.

Mode of Action

There appear to be two schools of thought in regard to the mode of action of these drugs. Briefly stated, the experimental facts strongly support the simplest explanation, accepted in Britain and in U.S.A., *viz.*, "That sulphanilamide has a direct damaging action on streptococci, either actually killing them, or at least preventing their growth; the limited numbers upon which the drug acts *in vitro* correspond to those found in the bloodstream and elsewhere in widespread infection. Bacteriostasis, which if complete, must ultimately result in the victory of the bodily defence mechanism. . . ." There is strong evidence which "indicates that there is no stimulation of the defence mechanism, in the sense of any altered behaviour on the part of the leucocytes."

The other explanation is supported by Domagk and other Continental workers, who maintain that prontosil has an action *per se*, apart from that of the sulphanilamide which it liberates in the body. Several highly speculative hypotheses have been propounded to fit this view but so far they have received little support from the work of American and British workers.

Therapeutic Action

It is hardly necessary to mention that sulphanilamide and related drugs have been found most conspicuously successful in the treatment of streptococcal infections. But it must be clearly recognised that susceptible infections are only those due to *Str. pyogenes*. Other varieties such as *Str. viridans* and *Str. faecalis* are not influenced by these drugs. Even in the group *Str. pyogenes* there are resistant types. Studies of bacteriostatic action *in vitro* have shown that whereas groups A and C are fully susceptible, the effects on groups B, E and G, are variable, while on D there is none. It might be as well to recall at this point that streptococcal infections in animals are seldom due to group A; *e.g.*, bovine mastitis (*Str. agalactiae*) falls in group B, equine streptococcal infections in group C, and those of dogs mainly in group G. In the streptococcal infections of animals, therefore, the same striking success as has been achieved in human infections with sulphanilamide may not be obtained. Nevertheless the unpublished work of Stableforth at the Royal Veterinary College and of several clinical reports in this journal are sufficiently encouraging to merit these compounds having a definite value in veterinary medicine. Further, it may be that other chemically related compounds will be found to be as highly active against animal streptococci as sulphanilamide is against group A.

From the comparative point of view, it is interesting to note that sulphanilamide, prontosil and related compounds have been found to be highly successful in the treatment of puerperal fever and erysipelas in man. Less favourable results have apparently been obtained in tonsillitis, scarlet fever, otitis media and meningitis. The treatment has been used successfully in various other conditions, including streptococcal pneumonia or empyema, burns and cellulitis. An adequate series of wound infections is lacking and Professor Garrod remarks that this would be of interest, since there are indications that connective tissue infection responds less readily than, for instance, erysipelas.

In regard to infections other than those due to streptococci, information on clinical results is rather scanty. Among infections of veterinary interest, it would appear than *Staph. aureus* is at least moderately susceptible, and according to Domagk uleron gives better results in this case than the other compounds. Sulphanilamide has given promising results in gas gangrene due to *Cl. welchii* and amply justifies further trial. Several favourable reports in *Br. abortus* infection in man have been published. Experiments have also been reported from which it appears that *Br. abortus* is more susceptible than *Str. pyogenes* to bacteriostasis by sulphanilamide *in vitro*. If this work is supported by further trial, there may be a possible field for the use of this drug in *Br. abortus* infection in cattle and horses (fistulous withers).

Toxicity

It would appear that the toxicity of prontosil for animals is low and that of sulphanilamide even lower; doses in excess of those used in therapeutics cause no demonstrable effects whatever. In striking contrast to this are the numerous toxic effects which have been observed in man. It should be remembered, however, that toxic effects will arise in any species if these drugs are used in conjunction with sulphates (*e.g.*, magnesium sulphate) either in the diet or as medicaments.

In concluding his review, Professor Garrod

(*Concluded at foot of col.* 1, *page* 1014.)

ABSTRACTS

[**Excretion of Streptococcus pyogenes in the Milk of Naturally Infected Cows.** Bendixen, H. C., and Minett, F. C. (1938.) *J. Hygiene.* **38.** 374-383. (Joint publication from the Royal Veterinary and Agricultural College, Copenhagen, and the Research Institute of the Royal Veterinary College, London.)]

Occasional outbreaks in the human population of milk-borne streptococcus disease (scarlet fever or tonsillitis) are now well known, though some speculation persists as to the exact way in which the milk becomes contaminated. In the larger outbreaks at least, it is usually accepted that the causal streptococci, derived in the first place from a human attendant, are implanted in the udder, where they produce a mastitis and so extensive contamination of the milk. In the case of smaller outbreaks, it is still considered by some that the milk is contaminated directly from infected human beings, though even this is doubtful now that Pullinger and Kemp (1937) have shown that the streptococci concerned (*Str. pyogenes*) are incapable of multiplying in milk at ordinary atmospheric temperatures. Indecision on these matters is due in part to the fact that in most outbreaks in the past there has either been no attempt to locate the offending cow or no real attempt has been possible owing to failure to secure efficient co-operation among those concerned.

In the autumn and winter of 1936, outbreaks of scarlet fever or tonsillitis were reported at Morkov (a village in Denmark) and at Doncaster (England), involving about 100 and 364 persons respectively. A description of these outbreaks has been given by Henningsen and Ernst (1938) and by Watson (1937). In both cases the outbreak was traced to a herd which contained a cow proved to be excreting very large numbers of streptococci of a sort dangerous to man, and the authors were fortunate in being able to purchase these cows and keep them under close observation. The Morkov cow showed a relatively mild infection in one fore quarter and she continued to excrete *Str. pyogenes* from this quarter up to the time she was slaughtered, namely for at least 13 months, including a dry period of about three months. In the Doncaster cow the infection was present in the two fore quarters and was so intense that the quarters were destroyed comparatively quickly; nevertheless she continued to excrete streptococci for about six weeks.

There were two features emphasising the dangerous character of these cows. Both at times showed a high streptococcus count in the milk and both passed through a stage of several days' duration when symptoms of mastitis were either not evident or not pronounced, although the milk was known to be infective. There is reason for thinking that severe injuries to the teats such as may be caused by treads from other cows may be a decisive factor in promoting infection of the udder with these streptococci.

F. C. M.

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["**Activity of the Sheep Tick.**" Hendrick, J., Moore, W., and Morison, G. D. (1938.) In Letters to the Editor, *Nature.* **141** (3571.) 648. (April 9th.)]

Various workers in Great Britain have reported that the activity of the sheep tick, *Ixodes ricinus* L., is confined to two periods of the year, the first extending from March until early June and the second from late August until the end of September; outside these periods it is said that ticks are scarce during the summer months and completely inactive in winter. From observations started in the spring of 1937, Hendrick, Moore and Morison find that, in the Deeside area, the activity of the tick differs very widely from that reported elsewhere. Sheep were attacked as soon as they were put out on the hill-grazing and the infestation progressively increased to a peak in July; thereafter there was a gradual decrease. Following a severe December snowstorm, seven deer were shot and examined during January; all had ticks attached to them, while a flock of sheep examined during the same month also had a noticeable tick infestation. The authors conclude that tick activity is continuous througout the year in north-east Scotland, the seasonal incidence being greatest during the summer and lowest in winter.

J. N. O.

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[**Experimental Thrombosis in the Dog.** Schmidt, J. D. E. (1938.)]

We reproduce the summary, in English, given by the author of this work, as follows:—

From medical literature it appears that the occurrence of post-operative and puerperal thrombosis is very rare in domestic animals, especially in dogs, as compared to man.

This contrast is the more striking because of

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states that: "Advances are likely in two directions. One is the better employment of existing remedies . . . several types of infection have apparently not yet been made the subject of adequate therapeutic trial. . . . The other line of advance lies in the introduction to therapeutics of new compounds now only in the stage of laboratory trial."

N. J. Scorgie.

the frequency of surgical operations and parturition in the domestic animals. During our experiments we tried to find an explanation for this fact as it cannot be supposed that the three factors that stimulate thrombosis, *viz.*, diminished rate of the blood-stream, changes in the vessel-walls and changes in the constitution of the blood should be without influence on our domestic animals. This study was made with the intention of ascertaining whether a certain factor protects domestic animals against post-operative or puerperal thrombosis; if so that factor must either operate insufficiently in man or be absent altogether. In a series of 2,369 *post-mortem* examinations performed with dogs only two cases of post-operative thrombosis were recorded. So we assume that there must be, in man as well as in animals, a common factor relating to predisposition for thrombosis which has a stronger influence in man than in animals.

We believe that on account of the great anatomical and physiological differences between the skin of man and the skin of the domestic animals, in this case the dog, the latter is better protected against traumata than the former.

No doubt external violence will cause more serious subcutaneous extravasations of blood in man than in animals. We desire to draw special attention to the fact that accidents in street traffic occurring in animals cause hardly any traumata of the skin or subcutaneous haematomas. Our hypothesis was that the latter generally lead to resorbtion of the products of cell-decay, in this case of tissue-decay, in which the cause of thrombosis would be found. In this connection it should be borne in mind that not every subcutaneous or intraperitoneal extravasation will lead to thrombosis, even if those haematomas are accompanied with any illness, surgical operation or accouchements. The experiments confirmed our hypothesis that a series of large and small haematomas may "sensitise" the organism, resulting in a predisposition to thrombosis, which may lead to thrombosis either spontaneously or combined with some illness, surgical operation or accouchements. We notice one of the primary causes of post-operative or puerperal thrombosis in the seemingly harmless traumata of the skin with the minor subcutaneous haematomas, and contingently intraperitonal extravasations, provided they occur in a certain order. This recent conception regarding the aetiology of post-operative or puerperal thrombosis is not contrary to the clinical observations on man; on the contrary, it is even confirmed by them. Many surgeons observe that corpulent people are more predisposed to post-operative and puerperal thrombosis than are lean ones. This is in accordance with our hypothesis; indeed, corpulent people are more exposed to the action of traumata and each trauma operates more violently than in the case of lean persons. Our theory explains the increase in frequency of post-operative and puerperal thrombosis on account of the fact that both with the increase of the cultivation of sport and the more intensive traffic, man and animals are much more exposed to traumata than formerly. The increase of the frequency of thrombosis with the advance of age of man may be explained by the fact that corpulency and retardation of the blood-stream go together with the increase of one's age.

Our theory opens up a double prophylactic perspective. First one must recommend the postponement of any surgical operation (except those of acute necessity) on patients whose medical history shows that they are subject to or have lately been subject to traumata of the skin, or on those patients in whom small intraperitoneal extravasations are found. Moreover where gravid subjects are concerned, physicians should advise such conduct as will prevent traumata of the skin as much as possible.

In our experiments, which confirmed the hypothesis set up by us, artificial haematomas were set up in dogs by repeated subcutaneous or intraperitoneal injections of their own citrated blood for some weeks. Traumata of the skin were imitated by clinching a fold of the skin with a heavy spanner for a long time. In this way we intended to cause the sensitisation mentioned by us, the degree of which was determined by the velocity of the clotting of the blood. This determination, for which Westergren's was chosen, proved its serviceableness as a rough reaction to show the presence of the predisposition to thrombosis in the experimental animals.

After a long period of sensitisation, followed by a surgical operation, we twice succeeded in causing a pathologic-anatomic thrombosis in the vena portae lienalis. In six cases the presence of thrombosis could be proved clinically, *viz.*: once in the left foreleg, once in the right foreleg, twice in the left hindleg, once in the lower front-chest and once in the left cheek.

Our control animals, not previously subjected to sensitisation, did not show any sign of thrombosis after surgical operations; the thrombosis created in our experiments with animals did not cause death through embolism of the lungs.

A remarkable observation was made showing that no increase in the velocity of blood-clotting is observed even after prolonged sensitisation when a purulent focus is present, which gives the impression of the sensitisation factor being retarded here. Extensive experiments in connection with the above mentioned observations we intend to make later on, may lead to new prophylactic possibilities.

[**Ossification of the Sesamoidean Sheath of the Perforans Tendon in a Horse.** Nieland (1937.) *Zschr. Veterinär.* **49.** 9. 315-321.]

The laying down of bone in connective tissue may take place without any increase in the number of cells, or following marked inflammatory changes with new cell formation.

Ossification may follow any extensive pathological change of tissue, but, apart from the actual nature of the condition, the amount of bone laid down depends on the concentration solubility of the calcium in the body. The microscopic picture of this osseous tissue resembles that of normal bone, but the bone cell is larger, and the general arrangement of the desposit more irregular.

In ligaments, tendon sheaths and other allied structures, the change is usually the result of an initial rupture or violent strain, but may follow a gradual fibrosis of the area associated with a mechanical lameness.

The specific case recorded occurred in a 15-year-old gelding. The lesion consisted of a large, hard swelling of the near hind fetlock area, particularly in the region of the sesamoidean sheath of the perforans tendon. It had gradually increased in size during the last five years, and was now associated with lameness. An X-ray photograph revealed the presence of a compact mass of new tissue, interspersed with bone. Treatment—blistering, firing, and neurectomy—was of no avail and the animal was slaughtered. On dissection of the affected limb, the chief changes were noticed in the perforans sheath and neighbouring ligaments; and another X-ray picture, taken after the area had been dissected out, clearly showed ossification of the tendon sheath.

It is suggested that the inflammatory process commenced at the attachment of a ligament following, perhaps, a strain. This was followed by inflammatory changes in other ligaments, and the tendon sheath, with an ultimate ossification of part of both these structures. Neither the joint cavity nor the tendon itself showed any deposition of bone.

The author stresses the point that if proliferative changes occur in this area resulting in ossification, the tendon sheath is the structure which is chiefly affected.

C. W. O.

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[**Treatment of Sterility in the Mare.** Schutze, S. (1938.) *Tierärztl Rdsch.* **44.** 12. 185-188.]

Schütze is one of the protagonists of the view that equine sterility results from inflammatory changes of the uterine mucosa. In his opinion, ovarian cysts are not a primary cause but the sequelae of the uterine changes. The commonest symptoms observed in the examination of a large number of mares was a uterine catarrh varying from a slight inflammation not recognisable during life, to metritis accompanied by a purulent discharge. His treatment is irrigation of the uterus with three litres of water sterilised by boiling and in which are dissolved three "Marienfelde bougies" (presumably a German proprietary article). The solution is siphoned off after three to five minutes. The treatment is repeated at two to three week intervals according to the severity of the metritis, and the mare is served four to six weeks after the last irrigation. He cites eleven typical cases treated in this manner, which resulted in normal pregnancy.

N. J. S.

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Local Treatment of Non-parasitic Skin Diseases in the Dog. Blind, K. (1938.) *Tierärztl. Rdsch.* **44.** 10. 154-158.]

It is recognised that most eczematous skin conditions may be associated with some "internal cause," such as metabolic derangement or disease such as nephritis. Impacted anal glands may be another cause.

If these aetiological factors are recognised and corrected, together with appropriate dermatological measures, the skin disease clears rapidly. On the other hand, if neglected, the skin undergoes pathological changes, becoming thickened, and covered with disquamated horny epithelium. There is scantiness of hair, and the hair which remains is coarse in character and does not lie evenly on the skin. There is also a marked scratch reflex.

It is this type of case with which the author deals. The treatment adopted is the application of a preparation known as linimentum sulfuris colloidalis compositum. It is reputed to be non-toxic, and the principal ingredient is colloidal sulphur, along with salicylic acid to soften and loosen the horny epidermis, and balsam of Peru to promote growth of hair. The three ingredients are incorporated in a fatty base to facilitate skin penetration.

Seven cases suffering from this chronic eczematous condition, including two cases of acanthosis nigricans in dachshunds, are recorded in detail. Treatment in each case has given excellent results.

C. F.

ARMY VETERINARY SERVICE

Appointments in India Vacated

July 29th (India Office announcement)—The following officers R.A.V.C. have vacated appointments in India (D.A.D.V.S.): Major P. S. Sparling, Major C. Holland, M.C. (June 8th).

The Veterinary Record

August 6th, 1938.

Does Bovine Haemorrhagic Septicaemia Occur in Great Britain?

TWO papers are published in this issue dealing with the reported occurrence of the disease which goes by the above name, in Northumberland and in the Eastern Counties, respectively. Their publication will undoubtedly excite comment. As Mr. Shirlaw says, the claim made by Tweed and Edington, in 1930, to have identified bovine haemorrhagic septicaemia in Great Britain seemed to have been silenced by the authority of the late Professor Gaiger's denial, that anything similar to the common acute enzoötic disease with which he had been familiar in India exists in this country. Mr. Shirlaw himself, however, brings now the weight of his own Indian experience in support of the thesis that a disease aetiologically similar to the Indian disease, though shading off from it to varying degrees in the severity of its clinical and pathological manifestations, actually occurs here.

The question in reality resolves itself into the simple one, does a disease occur in cattle in this country in which the primary causal agent is a bacterium belonging to the group or genus *Pasteurella*? Whether or not if such a disease is identified we call it a "haemorrhagic septicaemia" is immaterial. This is, in fact, merely a *name* that was introduced by Hueppe, in 1886, to designate a group of diseases—fowl cholera, rabbit septicaemia, swine plague, and the deer-and-cattle disease (*Wild-und-Rinderseuche*) identified in 1878 by Bollinger—all these diseases having this much in common, that they were apparently caused by bipolar-staining ovoid Gram-negative bacilli, and the chief *post-mortem* changes were haemorrhages in the serous and mucous membranes, subcutaneous and some other tissues. Buffalo plague—the *barbone* of the Italian authors, Oreste and Armanni, 1886, was soon added to the list. Soon afterwards the enthusiasm of some of the earlier bacteriologists seemed to run amok and almost every disease the pathology of which was difficult to elucidate, such as equine pneumonia, dog distemper, and some other diseases, was asserted to be a pasteurellosis—a name popularised by Lignières, 1900, the bipolar bacilli having been called *Pasteurella* by Trevisan in 1887. Then, there occurred a reaction. More careful investigation showed that some of these diseases, such as equine pneumonia, were not commonly associated with bacterial infection of this kind. And, finally, in 1904, the discovery by Dorset, Bolton and McBryde, in U.S.A., of the virus aetiology of swine fever, eliminated "swine plague" (the *Schweineseuche* about which the Germans had written so prolifically) from the list of disease entities, and made cautious workers chary about accepting the demonstration of *Pasteurella* organisms in animals after death as evidence that these organisms were the primary cause of the disease. Certain diseases assigned to the "haemorrhagic septicaemia" group, however, have remained indisputably "pasteurelloses." Such diseases have been accepted as belonging to this category when the virulence of the pasteurella infection is exceedingly high, as for example, in fowl cholera and rabbit septicaemia, and prophylactic measures, in the form of serum and vaccine treatment, based on the assumption that pasteurella organisms are the direct or specific cause of morbidity, have given undeniably clear-cut results. For parallel reason, there has been no difficulty in assuming that *barbone* and the acute or hyperacute cattle and buffalo disease seen in India is a primary pasteurellosis. It is notorious, however, in all these diseases that it is difficult to transmit infection artificially with the cultivated bacteria by any of the presumed natural routes—such as by feeding or inhalation—though disease can usually be readily set up by parenteral inoculation.

What ought to be the criteria for accepting any of the more chronic forms of bovine disease, in which *Pasteurella* organisms are demonstrated *post mortem*, as primary pasteurelloses? For very long, we have known in this country that bovine pasteurellosis can be revealed by morbid changes other than those of a typical "haemorrhagic septicaemia" when

the gravity of infection somewhat abates. This was brought home to us subsequent to the rather fierce controversy which raged in 1891 and 1892 over the so-called "Deptford Ox Case," when, as will be recalled, the lungs of an ox which had been imported from the United States of America and was slaughtered at Deptford, revealed changes indistinguishable from those of contagious bovine pleuro-pneumonia, which was then on the point of being exterminated from this country. The weight of authority[1] here at the time was strongly in favour of action being taken on the assumption that the lesions were those of this latter disease. At about the same time, Nocard[2] found similar lesions in the lungs of imported American cattle slaughtered in Paris, and identified *Pasteurella* organisms in them. It was then soon learned by observers that such lesions were those of the common enzoötic form of bovine pasteurellosis which was known as corn-stalk disease in North America. Hence, it became recognised that when a bovine pasteurellosis runs a somewhat more protracted course than in the typical "haemorrhagic septicaemia"—the *barbone* and common Indian forms—a pectoral form, in which the lesions resembled those of contagious bovine pleuro-pneumonia, became the dominant form. There is no *prima facie* reason why the disease cannot occur in this country—at the same latitude as in North America. It is curious that the disease is one that is not well-known to workers in Africa.

Organisms of the *Pasteurella* group are, we well know, susceptible readily to profound changes in virulence, both as they are isolated from the bodies of animals and after cultivation in the laboratory. It is a group, too, as has been said, in which the response to serum and vaccine prophylaxis in the susceptible subject is very striking. *A priori*, therefore, the evidence published in the papers which appear in this number would suggest, though it does not absolutely prove, that the workers were dealing with a bovine pasteurellosis. Before we can formulate strict criteria, a great deal more work needs to be carried out yet to explain many points that still remain obscure, not only with these forms of infection which have now been reported to occur in this country, but also upon the mechanism of natural transmission of infection in the whole group of animal pasteurelloses. That has only been satisfactorily settled in the case of one member of this group, namely human plague. For several reasons, it has not hitherto appeared that a similar mechanism (*i.e.*, transmission by means of an insect vector) applies in the case of the common animal pasteurelloses. But then, as Mr. Shirlaw rightly remarks, this has not been worked out satisfactorily in the case of several other animal diseases, such as braxy and lamb dysentery, and he might have added blackquarter and contagious bovine pleuro-pneumonia and still more diseases. The exclusion of a virus as the primary agent is not always an easy matter, knowing what we now know, especially after the more recent influenza researches in swine and man about how slight need be the primary depression caused by the virus for "sub-pathogens," such as the *Pasteurella* organisms which may be present in the respiratory tract, to gain a footing. And there may be other agencies, such as cold exposure and faulty food (as has been alleged in corn-stalk disease), which may serve as the requisite initial depressants—but here, any statement tends to be merely speculative pending the execution of a good deal more experiment to establish such a connection.

[1] *Veterinarian* (1892.) **65**, 55, 79, and 190; *J. Comp. Path. & Therap.* (1891.) **4**, 154.

[2] Nocard, E. (1891.) *Bull Soc. Cent. Méd. Vét.*, Paris, p. 424 (*cit.* Hutyra and Marek).

THE MINISTRY AND SHEEP TICK CONTROL PROPOSALS

Proposals for control of the sheep tick infested areas, put forward by the North-East Scotland Sheep Tick Committee, have been rejected by the Ministry of Agriculture. The committee, backed by the county councils of Aberdeen, Kincardine, Banff and Forfar, sent a deputation to the Ministry last March. They proposed that areas infested with tick should be scheduled and that it should be made illegal to remove sheep from these areas unless they had been dipped not more than two days before removal.

The Ministry replied: "It appears there is no evidence to support the contention that the tick by itself is responsible for serious loss. On the other hand, it is clear that heavy losses may be sustained as a result of the tick being a carrier of disease."

So far as the spread of tick to non-infested areas is concerned, the Ministry hold that for a considerable period sheep have been moved continuously from infested to non-infested lands. "A possible cause may be changing soil conditions and the impoverishment of the grazing lands. If this is so, it will be evident that dipping is insufficient.

"In the Minister's view further research work is needed before the question of administrative control can become a practical proposition. Concentration on research appears to be the only course that offers any prospect of eventual success."

REPORT

[**Progress of Veterinary Research in India during the past Twenty-Five Years.** WARE, F. (1938.) Report to the Indian Science Congress, Calcutta, 1938.]

A detailed account of the work done is given in seven general sections with 25 sub-sections, each of the latter covering a particular disease.

The following shows the size of the veterinary staff in India:—

"The total number of gazetted staff employed in the Civil Veterinary Departments in India in 1910-11 was 36, and this has gradually expanded to a total of 147 in 1935-36. The subordinate staff employed in 1910-11 amounted to 955, which number has now been increased to 2,085, but it will be seen that this is still far short of what is required for the proper application to the field of the results of veterinary research throughout the whole of British India. The Royal Commission on Agriculture of 1927 placed the amount of veterinary staff required for British India at 300 officers and 6,000 subordinate staff."

From the manner in which the different conditions are dealt with this report forms a valuable handbook on a small scale to the present position with regard to the different diseases of India.

Rinderpest has been the most important enzoötic. The position with regard to control has improved considerably during recent years and tribute is paid to Edwards' work which led to the introduction of goat-virus vaccine.

Haemorrhagic septicaemia has been one of the serious diseases of India ever since it was first recognised in that country. Specific serum and vaccine, prepared at the Imperial Institute for Veterinary Research, Muktesar, are used for its control.

Anthrax is also an important disease in India. A serum is issued and methods of immunisation are under investigation. It is considered that a spore vaccine may be of great value.

Black-quarter causes losses and vaccines are prepared at Muktesar.

Tuberculosis, Johne's disease, bovine contagious abortion and mastitis are under investigation in relation to the conditions special to India. All are rather more prevalent than had previously been realised. They are of particular importance in herds containing imported breeds and managed on more intensive lines than is the case with village cattle.

Sheep and goat diseases are receiving attention as considerable losses are suffered.

Glanders has still to be reckoned with and mallein is prepared at Muktesar. Strangles causes a lot of trouble in young stock of the Army Remount Department and certain private studs. It has been actively investigated at Muktesar for years. Equine abortion is troublesome in stud farms.

Poultry diseases have been given increased attention during recent years.

Dogs of imported breeds are subject to piroplasmosis and possibly to conditions not yet well understood. Salmonella infections are now found to be important and are being studied.

Surra is dealt with largely by chemotherapy. Dourine, which caused anxiety in the Punjab a generation ago, has not been encountered since 1919.

Bovine piroplasmosis causes considerable loss. The commonest piroplasm is *B. bigemina*. *Theileria mutans* is almost ubiquitous, but usually regarded as harmless. There is a brief discussion on the *Theileria* position. Both *B. caballi* and *B. equi* occur in India; anaplasms are encountered occasionally.

Both the cutaneous and visceral forms of leishmaniasis occur in dogs.

Coccidiosis is important, both in cattle and in fowls. Amoebiasis has been recognised in dogs.

A buffalo malaria parasite is met with sometimes at Muktesar. Little, however, is known about it.

An account is given of the insects, ticks, etc., that occur in India. Worms cause widespread losses as in other countries. The parasites and disease they cause are under investigation. Reference is made to nasal granuloma in cattle.

The animal breeding operations in India are described. There has been considerable importation of European breeds and improvement in native breeds by the application of modern genetical knowledge. Castration with the Burdizzo machine has proved to be very popular and this work is an important adjunct to the improvement of village cattle by the use of improved sires. This genetical section includes reference to work on buffalo, goat and sheep breeding. Horse breeding in India is almost entirely in the hands of the Army Remount Department.

The report closes with details of animal nutrition as related to Indian conditions.

REVIEW

[**A Brief Survey of Some of the Important Breeds of Cattle of India.** By Col. Sir Arthur Olver, C.B., C.M.G., F.R.C.V.S. Miscellaneous Bulletin No. 17—Imperial Council of Agricultural Research. India. 1938.]

Sir Arthur Olver has made a useful and instructive contribution to our knowledge of the breeds of cattle in India by publishing this bulletin. In his introduction, he says that his main objects were to give some idea of the basic origin and the chief characteristics of some of the best recognised breeds of the cattle of India. We think he has succeeded admirably.

It is perhaps necessary to point out, to our younger readers in particular, that the bulletin must not be regarded as the equivalent of a handbook on British Breeds of Livestock. The cattle of India are as yet very far from being capable of being described as a series of breeds of such homogeneity as those we are accustomed to in Europe. The temperament of the peoples who compose India, their systems of agricultural and livestock breeding practices, the itinerant cattle dealer, the peculiar nature of the climatic conditions, which induce migrations in search of new pastures, no less than the enormous numbers of cattle (estimated at more than 200 million head), all militate against the possibility of pure breed formation and maintenance.

There are, however, certain basic types, the broad characteristics of which run through a number of so-called breeds. These have been selected by the writer, described shortly, and photographed. It can be said at once that the photographs are uniformly admirable, and whether they are of individual animals, or of a number of individuals, they give an excellent impression and without them the bulletin would lose much of its value. Some 25 breeds are considered, including four breeds of buffaloes; these are illustrated by photographs of more than 120 different animals. In most cases, a bull, a cow or cows, and in the draught breeds, bullocks are illustrated for each of the better recognised breeds. There are several in which a group of animals are seen standing or moving under natural conditions. These are quite as instructive as many of the more formally posed illustrations, though the latter naturally show more detail. In order to give our readers a better indication, we have obtained permission from the author to publish a number of photographs of some of the breeds. These are selected to include those foundation breeds which the author regards as having given rise to most of the other types.

It is pointed out that to understand the breeds and types it is necessary to consider them in relation to the migrations of tribes and peoples who have moved into, or invaded, India with their own cattle from time to time.

The author distinguishes five basic types as follows:—

I. *The Mysore Type*, represented by the Amritmahal, Hallikar, Killari, and other allied breeds in Mysore, Madras and Southern Bombay. These cattle are pre-eminently suited for fast work and endurance. They are highly strung, liable to be fierce, and the cows are poor milkers. They have established a reputation as the most active and enduring transport animals of India.

II. *The Gir Type.*—This is a type still reasonably pure in the Gir forest of South Kathiawar and extending over a large part of Western India. They constitute the Gir breed and enter into the formation of a number of other breeds. They have characteristic colouring, long pendulous ears hanging almost perpendicularly. This type has been developed principally along general utility lines. The milk yield is variable, bullocks are ponderous and heavy, phlegmatic, larger than the Mysore type, but suitable for slow, heavy draught purposes. They are regarded as the best beef breed in India.

III. *Hill Types.*—Scattered all over India, especially in the Himalayas, Baluchistan and in the poor forest regions, is a small type of cattle of fairly uniform colouring, conformation and general characteristics. These are regarded as being the descendants of a very ancient, original, indigenous type existing in pre-historic times. They are black, or some shade of red, have white pattern markings on extremities (forehead, dewlap and tip of tail). They are small, hardy, and can survive in poor districts where larger cattle are useless. They milk fairly well and are useful for light draught purposes in hilly territory. They are widely distributed and were probably taken by the conquered peoples of old India when they retreated before their victors into the more remote and inaccessible fastnesses. They are regarded as being a valuable strain and are capable of good yields and performance when well fed and properly managed.

IV. *The Grey-White Northern Type.*—This type comprises several sub-divisions represented by a number of breeds such as the Kankrej, Malvi, Hariana, Rath, Gaolao, and Ongole breeds. Some of these differ considerably from each other and are illustrated. They are capable of being greatly improved by care and management, and can serve draught and milking purposes. The two main types are:—(i) the lyre-horned grey-white cattle of Western

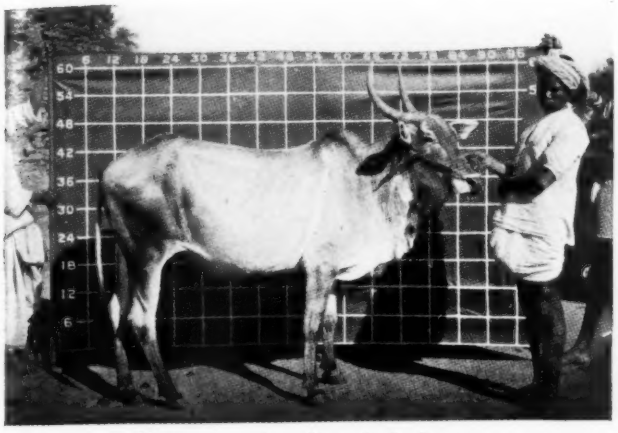

FIG. 1.—*Amritmahal Cow*
(*Plate III. Fig.* 1. *p.* 8.)

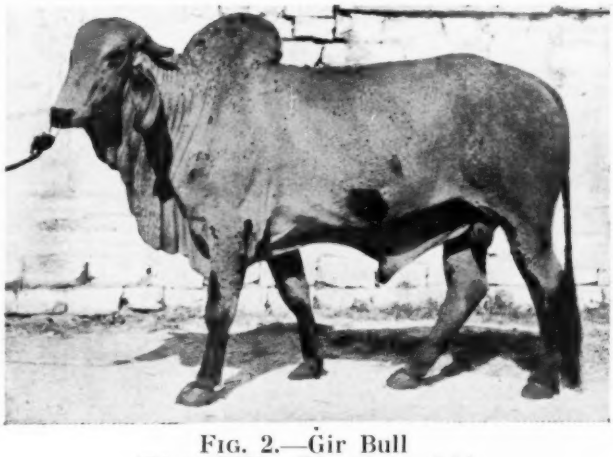

FIG. 2.—Gir Bull
(*Plate XIII. Fig.* 1. *p.* 14.)

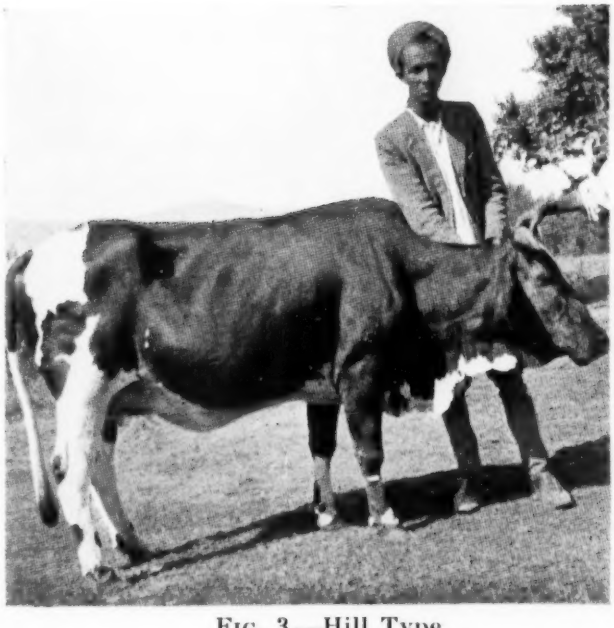

FIG. 3.—Hill Type
(*Plate II. p.* 4.)

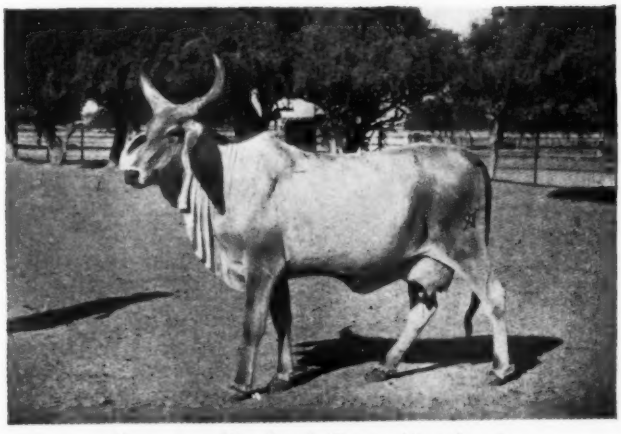

FIG. 4.—Kankrej Cow (Bombay)
(*Plate XX. Fig.* 2. *p.* 19.)

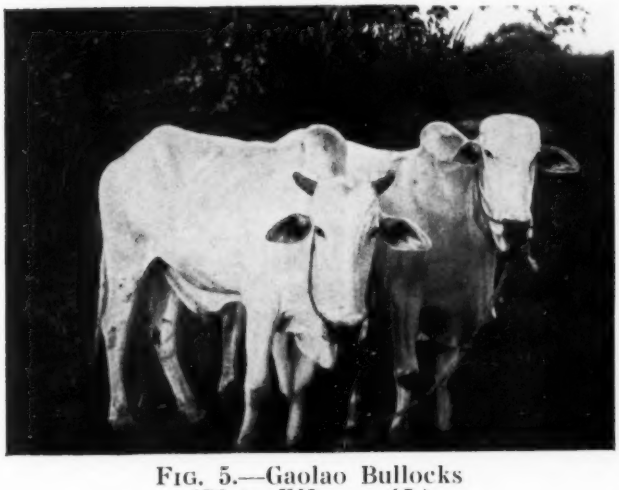

FIG. 5.—Gaolao Bullocks
(*Plate XII. p.* 15.)

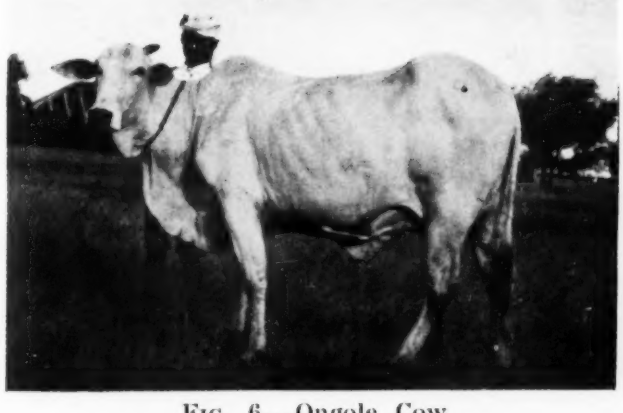

FIG. 6.—Ongole Cow
(*Plate XXXVI. Fig.* 2. *p.* 29.)

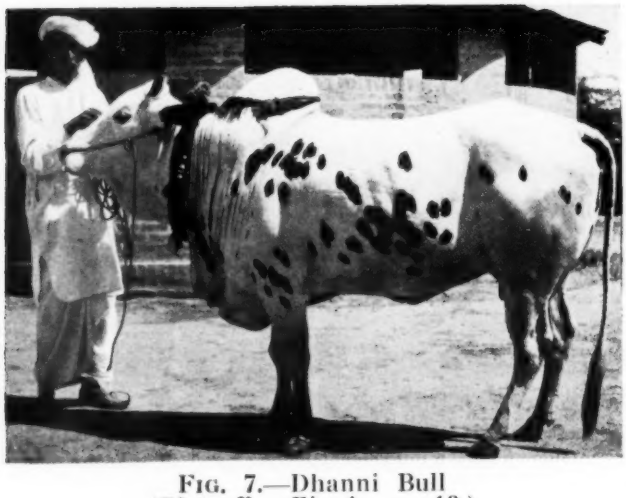

FIG. 7.—Dhanni Bull
(*Plate X. Fig* 1. *p.* 13.)

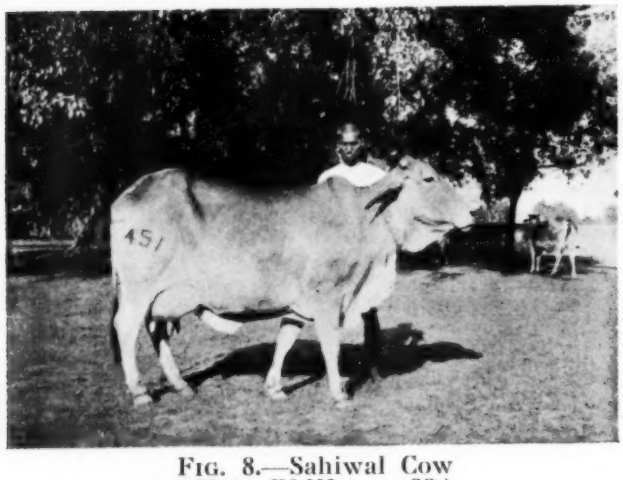

FIG. 8.—Sahiwal Cow
(*Plate XLIII. p.* 32.)

India (*e.g.* the Kankrej), which have a powerful, compact, heavy build, pendulous sheath and ears, and a moderate hump; and (ii) the stumpy-horned, narrower-faced whiter cattle of North and Central India, which are more slender in build, have a flat muscular build and less pendulous sheath. They are higher on the leg and are better milkers.

A cross between the two types makes a very useful general utility animal which will both milk and do cultivation or road transport work.

V. *The Dhanni Type*, represented by the Dhanni breed, are small cattle, rather long and low on the leg and exceptionally active. They are basically white with black markings varying from those like a Dalmation dog to large patches of colour. These cattle are compact and well built, have powerful rounded quarters, a moderate hump and short non-pendulous ears. They are not good milkers, but the bullocks are particularly active and suitable for medium draught and road transport.

The Sahiwal breed has been developed in the Montgomery district of the Punjab. This breed probably has Gir and Afghan blood in its constitution. It is the best milking breed in India and the bullocks make powerful but slow draught animals.

It seems fitting that we should make reference to the great stimulus that has recently been given to cattle breeding in India, particularly since the appointment of Lord Linlithgow as Viceroy of India, and very largely due to his initiative and sympathy. There are, as is well known, a number of breeds whose average milk yields are capable of comparing equally with yields from imported European dairy cows, provided they are scientifically selected and managed and suitably fed. Much information has been obtained from the work of the Animal Husbandry Bureau of the Imperial Council of Agricultural Research. There is a vast work still ahead in the education of the Indian cattle-owner into better methods of breeding, management and feeding, and in the proper utilisation of the products of the soil for his stock. It has already been demonstrated that neither climate nor disease need be a limiting factor in the general improvement of the enormous potential livestock wealth of the Indian Empire. Improvement in livestock conditions will indubitably bring in its train a general rise in the level of human health and happiness and lead to a greater degree of peace and contentment in that country with its proverbial "teeming millions." We would end this review by paying a tribute to the admirable work carried out by the author—Col. Sir Arthur Olver—during his tenure of the post of Chief Animal Husbandry Expert of the Imperial Council of Agricultural Research in India.

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

QUARTERLY MEETING OF COUNCIL IN EDINBURGH

A meeting of the Council, N.V.M.A., was held at the Royal (Dick) Veterinary College, Edinburgh, on Tuesday, July 12th, 1938, at 2.30 p.m.

The President (Captain Donald Campbell) occupied the chair, and there were also present: Messrs. David Brown and T. A. R. Chipperfield, Captain H. Scott Dunn, Major J. Gillray McGregor, Mr. P. McIntyre, Professor W. M. Mitchell, Major D. S. Rabagliati, Messrs. J. N. Ritchie, Geo. A. Sangster, Andrew Spreull, Alex. Thomson (Glasgow), A. H. Watson, Professor A. W. Whitehouse and Mr. T. Wilkinson. Mr. Wm. Watt, as chairman of the Provisional Committee for the Glasgow Congress, attended the meeting.

The minutes of the meeting of Council held in London in April, having been published in the official journal of the Association, were taken as read and, on the proposition of Mr. RITCHIE, seconded by Major RABAGLIATI, were confirmed and signed.

Arising out of them, the SECRETARY reported that at the last meeting, on the recommendation of the Finance and General Purposes Committee, it was decided to set up an Advisory Committee on Pig Diseases and to invite Professor Linton, Mr. Beckett, Mr. Anthony and Captain J. Smith to serve as members. The first three had agreed to do so, but Captain Smith found that his other activities would not allow him to serve on that particular Committee and would therefore be pleased if the Council would excuse him on that occasion.

On the proposition of Major RABAGLIATI, seconded by Professor MITCHELL, it was unanimously agreed that Mr. J. O. Powley be appointed to the Advisory Committee in question.

The SECRETARY now announced the receipt of apologies for absence from the following members of Council: Messrs. A. J. Adams, L. S. Balls, J. R. Barker, W. P. Blount, H. E. Bywater, B. A. Claxton, H. W. Dawes, Major Brennan DeVine, Messrs. J. B. Dier, P. F. Dolan, Major G. W. Dunkin, Mr. E. P. Edwards, Captain J. Fox, Mr. Arthur Gofton, Captain O. V. Gunning, Dr. Tom Hare, Mr. S. F. J. Hodgman, Major Hamilton Kirk, Mr. G. P. Male, Major A. B. Mattinson, Mr. J. W. McIntosh, Captain W. R. McKinna, Messrs. A. McLean, R. Barons Nelder, Major R. H. H. Over, Mr. J. W. Pritchard, Captain J. R. Rider (Hon. Secretary), Lt.-Col. P. J. Simpson, Messrs. A. Thomson (Beckenham), H. P. Standley, H. W. Steele Bodger and Captain W. G. Wragg (Hon. Treasurer).

The PRESIDENT said that before they proceeded to the correspondence, he thought it might be a matter of interest to them to know that this year the American Veterinary Association had celebrated their Diamond Jubilee by a Diamond Jubilee Convention. That was celebrated a week ago and he had taken the liberty of asking the Secretary to cable in his (the President's) name, and in theirs, the following message: "Hearty congratulations on Jubilee Congress and best wishes for the future. Campbell, President, N.V.M.A."

The President's announcement was received with applause.

Correspondence.—The only item under this head was a letter dated May 20th, 1938, received from the Hon. Secretary of the Australian Veterinary Association, and of which the following is the text:—

By instruction of the Council of the Australian Veterinary Association I have to inform you that Mr. Max Henry, B.V.Sc., M.R.C.V.S., Chief Veterinary Officer, Department of Agriculture, N.S.W., has been asked to act as delegate at the N.V.M.A. Congress to be held in Glasgow, September 5th to 9th, 1938.

He will convey the greetings of the Australian Veterinary Association to the National Veterinary Medical Association.

If there is any fee or subscription in connection with his representation will you please advise me.

With sincere good wishes from this Association.

The PRESIDENT commented that he was sure that that message would be received by the Council with equal gratification. (Applause.)

MEMBERSHIP

The SECRETARY announced that the number of members on the register of the Association at the April meeting of Council was 2,037.

The PRESIDENT: "That, gentlemen, I think you will be aware, was a record in the membership of the Association and a matter for congratulation." (Hear, hear.)

Resignation.—A resignation was received from Miss M. G. Tattersall (Burnley).

The SECRETARY informed the Council that this lady had married a member of the profession who was also a member of the "National," and had intimated that as she did not now require her *Veterinary Record* in consequence, she desired to resign from the Association.

The PRESIDENT observed that it always seemed to him rather a pity that where veterinary surgeons were in partnership they should look upon the membership of one member in that partnership as fulfilling their duty to the Association. (Hear, hear.). The circumstances in this particular case, however, were rather different, in that the partnership was a life one.

The resignation was accepted with regret.

Obituary List.—The SECRETARY read the obituary list as follows, members of Council standing the while: Mr. G. O. Ogden (Eastbourne), Mr. J. R. Jones (Llanrwst), Mr. D. E. Wilkinson (Chigwell) and Mr. John Brown (Perth).

New Members.—The PRESIDENT proposed from the chair and Mr. WATSON seconded, the proposition being carried unanimously, that the following members of the profession, who had duly filled in forms of nomination and paid their subscriptions, be elected into membership of the Association: Messrs. S. H. Adams (London), A. G. Anderson (Aylesbury), A. M. Bain (Hereford), A. Cook (Holsworthy), G. J. Crawford (Ministry), H. Davies (Manchester), J. H. Ellis (Trowbridge), A. Hans (Cavan), W. P. Loft (Basingstoke), J. McIlwaine (Llandyssul), T. M. Z. Mahamooth (Ceylon), G. A. Moore (Ministry), R. J. O'Neill (Ipswich), H. Quigley (Cambridge), A. H. Robb (Glasgow), D. R. Sahni (India), J. G. Salt (Bicester) and J. E. Taylor (Warminster).

The SECRETARY stated that with these additions membership was now brought up to 2,050. (Applause.)

Reports of Standing Committees

Organising Committee.

The report of this Committee, in the absence of the Chairman (Captain J. R. Rider) was read as follows by the Secretary and was carried without discussion on the motion of Major RABAGLIATI, seconded by Mr. J. N. RITCHIE.

The Organising Committee met at the Royal (Dick) Veterinary College on Monday, July 11th.

As the Chairman (Captain J. R. Rider) could not be present, the President occupied the Chair. There were also present Professor W. M. Mitchell and Mr. T. Wilkinson, together with Major McGregor and Dr. Whitehouse, who were co-opted for the purpose of the meeting.

The minutes of the previous meeting were read and signed as correct.

Arising from the minutes:—

(*i*) Letters were read from the R.S.P.C.A. Headquarters and the Hon. Secretary of the Folkestone Branch of the R.S.P.C.A., regarding an offer by certain of the local practitioners to undertake the treatment of sick animals of the poor either at their surgeries, or at the homes of the owners, without payment, which offer the Association had communicated to the R.S.P.C.A., with an expression of hope that all steps possible would be taken to ensure that only the animals of the genuinely poor were treated at the Central Clinic.

As the local branch of the R.S.P.C.A. had declined this offer on the ground that it was accompanied by an accusation that people who can well afford to consult a private veterinary surgeon are allowed to take advantage of the Society's Clinic, which they denied, the committee decided to ask the members concerned for definite instances where the Clinic had been so exploited and to pass this information, together with that already in its possession, on to the Folkestone Branch of the R.S.P.C.A., in justification of the remarks made on this point in the communication in which the offer in question was conveyed.

A copy of an agreement was presented which had been made for a trial period of six months between the local veterinary surgeons and the Southampton Branch of the R.S.P.C.A., for the provision of free treatment at a Central Clinic in Southampton.

The terms of this agreement were noted with approval and the committee passed a vote of thanks to Mr. H. W. Griffiths for visiting Southampton on its behalf in connection with this matter.

The committee received a report on the further enquiries made into the matter of the Pets' Service Club, and endorsed the action of the President in causing a notice to be inserted in the *Veterinary Record* intimating that the Organising Committee were unable to recommend members to participate in the activities of that Club.

Consideration was given to a summary of the views received from Divisions, with the exception of the Royal Counties and South Wales, on the suggestions of the committee for improving the efficiency of schemes for providing free treatment of sick animals of the poor in conjunction with the R.S.P.C.A.

It was agreed to adopt a number of modifications suggested by Divisions; that the scheme should come before the committee again for further consideration after it had been re-drafted, and that when an agreed scheme had been evolved steps should be taken to arrange for its discussion with the R.S.P.C.A.

The committee received communications from the Hon. Secretary of the North of England Division detailing the circumstances under which the Newcastle-on-Tyne Branch of the R.S.P.C.A. had withdrawn from the agreement they entered into in 1928 with the North of England Division for providing free treatment of sick animals of the poor at a Central Clinic in Newcastle.

It was decided to inform R.S.P.C.A. Headquarters that the termination of this agreement by their Newcastle Branch had been reported to the Association and to ask for their observations on the subject.

Parliamentary Committee.

Mr. Watson (Chairman) read and moved the reception and adoption of the following report:—

A meeting of the Parliamentary Committee was held at the Royal (Dick) Veterinary College on Tuesday, July 12th, 1938.

The Chair was occupied by Mr. A. H. Watson, there being also present the President and Major D. S. Rabagliati, together with Major J. G. McGregor and Mr. T. Wilkinson, who were co-opted for the purpose of the meeting.

The minutes of the previous meeting were read and signed as correct.

Arising from the Minutes, a letter was received from Captain J. C. Coleman expressing appreciation of the resolution passed at the last meeting in acknowledgment of his services to the committee and tendering his thanks to the members for their loyal support and help during the years he acted as Chairman.

A letter was read from Dr. L. Jordan resigning his place on the committee owing to his being no longer on the Council and because it would be difficult for him to attend meetings in the future. It was resolved that the resignation of Dr. Jordan be accepted with regret.

The committee learned with satisfaction that in spite of opposition from the Ministry of Health the Association had succeeded in persuading the Joint Select Committee of the two Houses of Parliament to agree to an amendment of the Food and Drugs Bill which would provide *inter alia*:—

(*a*) That any Member of the Royal College of Veterinary Surgeons employed by a Council for the purpose of the inspection of food shall be deemed an "authorised officer" for the purpose of meat under the provisions of this Act relating to unsound food, and

(*b*) That no officer of a Council other than the Medical Officer of Health, a Sanitary Inspector or a Member of the Royal College of Veterinary Surgeons employed as aforesaid shall be authorised to act in relation to the examination and seizure of meat.

The committee feel greatly indebted to Dr. W. R. Wooldridge, who represented the Association before the Joint Select Committee, for his help in securing this important amendment of the Food and Drugs Bill which for the first time gives the veterinary surgeon in England and Wales the same legal standing as the Medical Officer of Health in connection with meat inspection.

The committee approved a letter which had been addressed to the Chairman of the Livestock Commission asking that any suggestions in connection with slaughterhouse schemes issued by the Commission should include provision for the slaughter of animals and the examination of meat to be carried out under the direction and control of members of the veterinary profession and stating that the Association would welcome an opportunity to discuss the matter with the Commission or with the Livestock Advisory Committee. A letter received from the Commission was also read intimating that the Association's representations would be brought before the Commission at the earliest opportunity for their consideration. Communications on the same subject from Lieut.-Colonel J. A. Dixon were also submitted.

With regard to the Bacon Industry Bill, the committee learned from the reply to an enquiry sent to the Ministry of Agriculture, that it is not intended under the reorganisation of the industry provided for by the Bill, that the Development Board shall undertake those duties of veterinary inspection for which local authorities are at present responsible.

Mr. Wilkinson having seconded the motion, the President, in declaring the report open for discussion, said that he desired at that moment to say this : that the report contained an account of a very important result which had been attained in the securing of those amendments to the Food and Drugs Bill. By means of this they had now obtained something for which the Association and the profession had striven for years. He was sure that the Council would, with great heartiness, endorse the statement in the report that the Committee felt greatly indebted to Dr. W. R. Wooldridge for his work in this connection. (Hear, hear).

The motion was now put to the meeting and carried.

Veterinary Officers' and Public Health Committee.

Captain J. R. Barker (Chairman of this Committee) being absent, this report was read as follows by the SECRETARY, Mr. WATSON moving its reception and adoption, Mr. CHIPPERFIELD seconding, and the motion being carried without discussion :—

The Veterinary Officers' and Public Health Committee met at the Royal (Dick) Veterinary College on Tuesday, July 12th, 1938.

There were present the President, Professor G. F. Boddie, Major D. S. Rabagliati and Mr. T. Wilkinson, together with Major J. G. McGregor and Mr. A. H. Watson, who were co-opted for the purpose of the meeting.

As Captain Barker was unable to be present, it was agreed that Mr. A. H. Watson occupy the Chair.

The minutes of the previous meeting were read and approved.

The committee heard the letter which had been sent to the Ministry of Agriculture regarding the wording of tuberculin test certificates and the sale of tested cattle and the report of a meeting between representatives of the Association and the Ministry on the subject.

It was decided that the President and Mr. Watson should confer with Mr. Steele-Bodger and Captain Barker, who acted for the Association at the meeting with the Ministry, with a view to the matter being pursued.

As since the previous meeting it had been found that several of the local authorities in Scotland were approving for testing any practitioner on either of the Ministry's panels, the committee decided to defer for the present any action towards securing an amendment of the definition of "private veterinary surgeon" in the Milk (Special Designations) Amendment Order (Scotland), 1938, to bring it into line with the corresponding Amendment Order for England and Wales.

It was also decided to make further enquiries before any approach was made to the Department of Health for Scotland with regard to the activities of detention officers in connection with the enforcement of Para. 3, Part IA of the First Schedule to the Public Health (Meat) Regulations (Scotland), 1932.

Appointments Committee.

The SECRETARY read the following report of this Committee in the absence of Major DeVine (Chairman) :—

The Appointments Committee met at the Royal (Dick) Veterinary College on Monday, July 11th, 1938.

In the absence of Major DeVine, the Chair was occupied by Dr. Whitehouse. There were also present Professor G. F. Boddie and Major D. S. Rabagliati, together with Major J. G. McGregor and Mr. T. Wilkinson, who were co-opted for the purpose of the meeting.

The minutes of the last meeting were read and approved.

A letter was received from the South African Veterinary Medical Association intimating that the publicity given in the *Veterinary Record* to their complaint regarding the post of Assistant Veterinary Officer, Basutoland, had helped them to secure an appreciably better salary for this appointment, and thanking the Association for its support.

It was reported for the information of the committee that, following consultation with the Association's Advisory Committee on Oversea Services, an increase of £100 per annum had been obtained in the salary of an appointment as veterinary surgeon to several sugar estates in Trinidad and that applications for this post were now being invited by advertisement in the Association's journal.

The reception and adoption of the report was moved by Dr. WHITEHOUSE and seconded by Major RABAGLIATI.

In the absence of any discussion thereupon, the PRESIDENT said that before he put the motion to them, he thought he should say that they could not but be pleased at the indications contained in the report of the successful pursuit of the activities of the Association in regard to South Africa and to Trinidad. (Applause.)

Finance and General Purposes Committee.

It was agreed that this report, having been circulated to the Council, should be taken as read.

There being no discussion, the motion by Mr. RITCHIE, seconded by Mr. WILKINSON, that the report be received and adopted, was carried.

The report was as follows :—

At a meeting of the Finance and General Purposes Committee held at 36, Gordon Square, W.C.1, on Wednesday, May 11th, 1938, there were present the President (Captain D. Campbell) in the Chair, Mr. H. E. Bywater, Mr. H. W. Dawes, Major Hamilton Kirk, Mr. H. W. Steele-Bodger, Mr. A. H. Watson, and Dr. W. R. Wooldridge.

Apologies for absence were received from Major Brennan DeVine, Major J. G. McGregor, Major D. S. Rabagliati, Captain R. Simpson, the Hon. Secretary (Captain J. R. Rider), and the Hon. Treasurer (Captain W. G. Wragg).

The minutes of the previous meeting, having been circulated, were taken as read, confirmed and signed.

Arising from the minutes:—

(*i*) A letter was read from the Hon. Secretary of the British National Committee thanking the Association for its donation of £50 towards the Fund to assist reporters with their expenses in attending the Thirteenth International Veterinary Congress.

(*ii*) A communication was submitted from the Home Office acknowledging receipt of the Association's letter of April 11th in support of the representations made by the Royal College of Veterinary Surgeons relating to the Witnesses' Allowance Order, 1920, and intimating that it would receive early attention.

(*iii*) Letters were received from the Secretary—Editor of the American Veterinary Medical Association and Dr. A. Eichhorn, Chairman of the U.S. National Committee, accepting the invitation to the members of the A.V.M.A. Official International Veterinary Congress Tour to a reception in London, on the evening of July 22nd, as the guests of the N.V.M.A.

It was decided to make further enquiries as to the other arrangements being made for the party on the date in question.

Various suggestions were put forward by members of the committee regarding the form the reception should take, and these were referred to a sub-committee consisting of the Chairman, Mr. Bywater, Mr. Steele-Bodger, Major Kirk and Dr. Wooldridge, it being decided that the cost to the Association should not exceed the sum of £50.

Reports on Animals Proposed for Insurance.—Consideration was given to the questions which veterinary surgeons are expected to answer in reports on animals proposed for insurance, the legal liability of members making such reports having been raised by Major H. W. Brekke, of Darlington, and the views of the Hon. Secretary and the Solicitor were laid before the meeting.

It was the feeling of the committee that certain of these questions could not conscientiously be answered by a veterinary surgeon without a complete examination of the animal, taking in its scope features which, although technically they must be regarded as an unsoundness, have little or no bearing on the insurance risk; that the fee paid for this work was not compatible with such an exhaustive examination, and that arrangements be made for the President to discuss the matter with the Livestock Offices Association with a view to some modification being made either in the wording of the questions or the amount of the fee.

British Veterinary Association Limited.—The attention of the committee was drawn, in a letter from the Secretary of the Royal College of Veterinary Surgeons, to the existence of a company styling itself the "British Veterinary Association, Ltd."

After hearing a report from the President on enquiries he had made, it was decided: (*i*) To write to the Registrar of Joint Stock Companies about the similarity of the name of the company in question and that of the N.V.M.A., and asking whether he had considered that this was likely to confuse and mislead the public; (*ii*) That the matter be referred back to the Royal College of Veterinary Surgeons for consideration whether any infringement of Section 17 of the Veterinary Surgeons Act was involved.

National Institute for Research in Dairying, Reading.—A communication was considered bringing to notice the urgent need for additional buildings at the National Institute for Research in Dairying, Reading, and inviting the Association's support of the Building Fund.

It was the feeling of the Committee that this appeal was deserving of the Association's support, but after discussion it was agreed to defer making a recommendation to the Council pending the receipt of further information, which Dr. Wooldridge undertook to obtain.

Financial Statement for February, March and April.—In his absence, the Secretary read the Hon. Treasurer's report on a Financial Statement for February, March and April, which showed that on April 30th there were balances in hand totalling £2,504 3s. 0d., while liabilities amounting to £387 7s. 0d. had to be met. The Hon. Treasurer was authorised to pay these outstanding accounts.

Tuberculin Testing of Herds.—The attention of the committee was drawn to a sale catalogue of tuberculin tested cattle in which it was stated that most of the animals to be disposed of had been tested by a member of the profession holding a whole-time appointment. It was decided to make enquiries as to the accuracy of this statement and also the further statement in the catalogue that the test employed was the single intradermal tuberculin test.

The PRESIDENT said there was just one matter which he might mention to the Council. As most of them would now be aware, it had come to their knowledge that a party of about 40 representatives of the American Veterinary Medical Association were paying a visit to this country, and it was thought by the Finance and General Purposes Committee that it would be an appropriate and graceful action if the Association took upon itself to entertain the American party on July 22nd. He was sure they would entirely endorse that action. (Applause.) Arrangements for the entertainment were now well under way.

Editorial Committee.

In the absence of the Chairman (Dr. W. R. Wooldridge) the following report of this Committee was read by the SECRETARY, Major MCGREGOR moving and Major RABAGLIATI seconding its reception and adoption :—

A welcome feature of the past quarter has been the large volume of material submitted for publication in the General Articles section of the Association's journal. As a result, and despite the strict operation of the recently-introduced system of reference of all contributions to expert scrutineers, the committee, with some trepidation in consequence of the cautionary attitude expected of the Finance Committee, has enlarged the majority of the issues throughout the period under review, and is faced with the prospect of continuing to do so for some time. In this connection, an extension of the correspondence columns has been necessitated almost weekly and it may be mentioned that the committee has felt it right to take very liberal views of contributions to this "open forum" of the profession, while in no way accepting responsibility for the views expressed therein. It is desirable perhaps to emphasise this fact, that the committee permits as much freedom as is possible in the expression of views by individuals, even when these views directly conflict with its own.

As a matter of record, it may be stated that advantage was taken of the opportunity afforded by the announcement made at the last meeting of Council that the membership of the Association had passed the 2,000 mark, to stress in the leader columns the benefits of membership of the N.V.M.A. In the same way, the decision arrived at at that meeting to raise the status of the Appointments Sub-Committee on Overseas Services to that of a General Advisory Committee enabled the Editorial Committee to draw attention to this recent and most important recognition and expansion of one of the Association's activities, which has hitherto been confined to another committee.

Editorial comment has also been made on other important activities of the Association, including the recent amendment, accepted by the Parliamentary Joint Select Committee, to the Food and Drugs (Consolidation) Bill.

At the request of the Organising Committee, efforts are being made to find suitable data and contributions on the subject of the protection of animals in air raids, a sub-committee having been appointed to deal with this matter. Some

of this material already has been published, but that available is not as full as the committee would wish, owing to the dearth of information on this subject.

A short series of contributions designed to enlist the interest of members in the venue of this year's Congress—Glasgow—and its environs is in process of insertion, and matter relative to the Thirteenth International Veterinary Congress has also been accorded considerable space in our columns.

Arrangements have been made for the publication, on July 16th, of an enlarged issue commemorating the Golden Jubilee of the foundation of the *Veterinary Record* by William Hunting. The committee are greatly indebted to Dr. J. T. Edwards for the preparation of the masterly historical review which forms the principal feature of this Jubilee Number.

The report was greeted with applause and the motion was carried without discussion.

Reports of Other Committees

Dalrymple-Champneys' Prize, 1938.

The following report was received from the Committee appointed to consider nominations for the award of the Dalrymple-Champneys Prize, 1938 :—

The committee appointed to consider nominations for the 1938 award on the "Dalrymple-Champneys" Prize met at 36, Gordon Square on Wednesday, May 11th.

There were present Sir Weldon Dalrymple-Champneys, in the Chair, the President and Professor George H. Wooldridge.

An apology for absence was received from Professor Dalling.

The nominations received by the President were laid before the committee, together with the views of Professor Dalling submitted in writing.

After consideration, the committee unanimously resolved to recommend to the Council: "That the Dalrymple-Champneys Prize for 1938 be awarded to Dr. F. C. Minett, M.B.E., M.R.C.V.S."

The PRESIDENT said that the Council had heard the recommendation of the Committee to consider nominations for the award of the Dalrymple-Champneys Prize: might he take it that they endorsed the recommendation of that Committee ?

The Council expressed assent with acclamation.

Consultative Committee.

The report of this Committee was read by the SECRETARY as follows :—

There have been three meetings of the Consultative Committee since the April meeting of Council and two discussions with representatives of the Ministry.

The committee have raised with the Ministry the few cases reported to the Association of possible hardship among members who joined the State Service in a whole-time capacity from local authorities. It is felt that these have been met by the Ministry in as reasonable a manner as individual circumstances would permit.

Other questions affecting the whole-time service have also been satisfactorily settled, save that of readjustment of point-of-entry salaries on account of previous superannuation contributions: this is still under consideration in the light of an award of the Civil Service Arbitration Tribunal to local government officers transferred to the Unemployment Assistance Board. In one matter, however, the attitude of the Ministry has caused disappointment, namely their inability to extend to the four officers who transferred to the State Service from the Department of Agriculture for Scotland the same concessions in the amount of the certification fee payable to the Civil Service Commissioners as were made to local authority veterinary officers.

The Association has been supplied by the Ministry with copy of a circular which has been sent to all members of the Ministry's veterinary inspectorate explaining the extent to which such officers may share in the various activities of the Association.

Following upon the representations made by the committee, the Ministry have allocated to two members connected with private laboratories certain areas from which milk samples are being sent to them for biological examination.

Arising out of the formation of the two Panels of practitioners for part-time employment, consideration has been given to a number of cases in which it was shown that hardship would result to the member concerned. Most of these have been taken up with the Ministry and in the majority of cases the main cause of complaint has been, or shortly will be, removed.

In reviewing the foregoing cases it became apparent to the committee that two of the main causes for complaint arose from the reservation of "Accredited Herd" work and market inspection to either whole-time officers or Panel "A" inspectors. While the Ministry have always regarded market inspection as essentially a Panel "A" function, steps are being taken to review the position throughout the country, with a view to restoring the work to those Panel "B" practitioners by whom it was done prior to the operation of the Agriculture Act. In future, when the necessity arises, market inspection will be given primarily to Panel "A" men, but Panel "B" men will not necessarily be ineligible.

With regard to the examination of "Accredited Herds," however, the Ministry could not agree (as recommended by the Society of Veterinary Practitioners) to extend this work to Panel "B" in cases where it was not undertaken by the whole-time staff. But they have promised, on further pressure by the committee, to consider whether an exception can be made in certain districts where local practitioners had previously carried out the work and where persistence in the present arrangement was operating, and would continue to do so, unduly to the detriment of these practitioners, especially as there would be in these counties much less disease eradication work than in other areas.

In answer to an enquiry on the subject, the Ministry have informed the committee that local veterinary inspectors are provided with envelopes bearing the "Official Paid" design, for sending communications to the Head Office and the Veterinary Laboratory at Weybridge, and that the Department are prepared to refund postage on other communications incurred by part-time inspectors in the performance of other official duties. Arrangements are being made for this information to be made public in the *Veterinary Record.*

The arrangements made by the Ministry for providing the free veterinary service to poultry breeding stations recognised by the Minister, in pursuance of Section 24 of the Agriculture Act, 1937, have been discussed in view of their effect on private veterinary laboratories, and further consideration is being given to the matter. In this connection the committee have had the assistance of the N.V.M.A. Advisory Committee on Poultry Diseases.

On the representations of the Association the Ministry have now recognised the principle of sex equality as regards eligibility for posts in the State Veterinary Service. This has already been carried into effect, one woman graduate having been taken over as a whole-time officer and another having been appointed as a part-time inspector for both Panel "A" and Panel "B" duties.

The PRESIDENT, speaking to this report, said that it had been his usual practice when the report of this Committee had been presented, to say a few words by way of commentary, and with their permission, he wished to follow that practice that day, promising them that he would be very brief indeed.

At the time of the last meeting of the Council, the Ministry of Agriculture's scheme for putting into effect the provisions of the Agriculture Act had been in force only a matter of a few days. In a scheme so vast as this, which was at the same time an innovation, it was not to be expected that perfection would be achieved for a long time, if at all—at least it could not be expected that perfection would be achieved within the very short period of three months that had elapsed since the inauguration of the scheme. Those of them who had some part in assisting the Ministry. in hammering out that plan were as fully aware as anyone could be of its numerous imperfections: time would show what those shortcomings were, but, speaking personally, he held firm to the faith that time would also show that the scheme was essentially a sound and beneficial one. It had always been understood that after a certain time (and by general consent that period had been fixed at a year) there would be a review of the working of the scheme, which would show where weaknesses lay, where it had fallen from its aims and the direction in which improvements should be effected.

Their Consultative Committee took the view that it was too early yet to consider any revision of the principles on which the scheme was based. But they recognised that however beneficial it might be, however sound it might be, and however it might benefit individuals—and it had benefited many individuals—there were bound to be some on whom, during the transition stage particularly, it would bear hardly.

Therefore, since the last meeting of Council, the time of the Consultative Committee had been mainly occupied in investigating, and considering with the representatives of the Ministry of Agriculture, cases of individual hardship which had resulted from the operation of the Agriculture Act. Some months ago he gave an undertaking to the Ministry that no case would be submitted to it until it had been investigated by the Consultative Committee and until the Committee had satisfied themselves of its genuineness. That undertaking had been observed. He would like to say now that the number of cases of hardship which had come before the Committee had not by any means exceeded his expectations: rather had the number fallen short of his expectations. In a large proportion of the cases put to the Ministry he was glad to be able to say that the Ministry had acceded to the representations made by the Committee. A number of other cases were at present under consideration; some had been deferred for later consideration, but in very few cases indeed had the Committee's recommendations definitely been turned down.

The cordial relations which had existed now for a long time between their Committee and the Ministry of Agriculture, he was pleased to say, continued. They would all be aware that Mr. Vandepeer had been transferred to a different post and that Sir John Kelland had retired: their good wishes followed them both. (Hear, hear.) Their successors, Mr. Nathan and Mr. Cabot, had shown the same willingness to co-operate with them as their predecessors did. (Applause.)

The work of the Committee was not yet done, and he did not know when it would be done: it would not be long now until the main responsibility for it passed from him to other hands, but the work, at any rate, would go on and the aims of the Committee, which were the aims of the Association, would be the same as before—the upholding of the dignity and interests of the profession and the maintenance of the nation's good. (Applause.)

He begged to submit to them that report of the Consultative Committee.

Mr. WILKINSON moved and Dr. WHITEHOUSE seconded that the report be received and adopted.

The PRESIDENT having invited discussion, Captain DUNN observed that they did feel very much indebted to the Consultative Committee for the excellent work it had done, but he thought that a great deal depended on the Divisional and Superintending Inspectors. Although in Sussex, as he was very delighted to know, part-time officers were getting a good deal of work, that happy state of affairs did not exist in certain other districts, and he hoped that Divisional and Superintending Inspectors would get it into the back of their minds one day that the practitioner had to live. Sooner or later the Ministry would take over the whole of that work, and he did think that the practitioner was entitled to all that he could get while the going

was good. He did trust that the Ministry's officers would think kindly of the people in their counties.

The PRESIDENT replied that perhaps it would interest the Council, in reference to what Captain Dunn had said about this work not lasting for a long time, if he told them that at the last meeting of their representatives with the Ministry that very matter arose, and he put the question to the Ministry's representatives, as he had done previously, and received the same reply as on the former decision, the question being, if it was the intention of the Ministry that when they had the full complement of whole-time officers established at which they were at present aiming, there would be less work for the part-time inspectors—if it was the Ministry's intention that the service would eventually become a whole-time service. The Ministry's representatives endorsed word for word the earlier reply, that by the time the panel complement at present contemplated of from 500 to 550 whole-time officers had been appointed it was expected that work under the Agriculture Act would have grown so large in proportion that there would be at least not less work than at present left for part-time inspectors. (Hear, hear.)

The motion was carried without further discussion.

Provisional Committee, 1938 Congress.

Mr. WATT (Chairman of the Provisional Committee) read the following report :—

Four meetings of the committee have been held.

The committee at its first meeting appointed an Executive Committee out of which was formed an Emergency Committee, which met on many occasions.

The skeleton of the original programme as suggested by the Provisional Committee, has been built up by this committee and the final programme was approved by them at the meeting on March 4th, 1938. This programme has been published in the *Veterinary Record.*

It is gratifying to record that almost all the people selected and approached to contribute to the Congress programme, have been very willing to assist.

Through the General Secretary a good response from the various drug and instrument firms, etc., has been maintained. Almost all the available space has been taken up.

The Earl of Home, K.T., has been pleased to accept our invitation to be present at the annual banquet as the Guest of Honour, and to propose the toast of the Association. Other acceptances of the Association's invitation give assurance of a distinguished and representative gathering on this occasion.

The committee are somewhat disturbed at the slow response of the members of the Association to the request that hotel reservations and reservations for tickets be made early, as they feel that it will be unfair to the hotels concerned to expect them to hold their promised accommodation indefinitely.

A number of small details have yet to be completed but in the main the committee are satisfied that the arrangements made should prove satisfactory to the delegates attending.

W. WATT, *Chairman.*
ALEX. THOMSON, *Hon. Local Secretary.*

The PRESIDENT observed that since this was a progress report he proposed that the Council should receive it and with every satisfaction. (Applause.)

Advisory Committee on Overseas Services.

This report was read by the SECRETARY as follows :—

There have been two meetings of the Advisory Committee on Oversea Services during the past quarter, under the Chairmanship of Dr. W. R. Wooldridge.

In the last report to Council it was mentioned that invitations to join the committee had been extended to Captain W. P. Beal, Mr. W. H. Chase and Lieut.-Colonel H. A. Reid. These gentlemen have now become associated with the work of the committee, and Professor W. C. Miller and Mr. J. A. Griffiths have also agreed to serve on the committee.

In addition to Mr. U. F. Richardson (for Scotland) and Professor W. Kearney (for Ireland) the committee now have secured the services of various representatives in certain Colonial Territories to act as Corresponding Secretaries. Favourable replies are also expected shortly from those who have been invited to act in a similar capacity for other territories.

The greater part of the two meetings covered by this report has been taken up with a review of the conditions of service of the Colonial Veterinary Service, the committee having the assistance of several prominent members of the Service now home on leave and whose knowledge of local conditions has been most helpful in making this review.

As the Council may be aware from the correspondence and editorials which have appeared in the *Veterinary Record,* the changes introduced under the scheme of unification in 1936 have been the subject of much adverse criticism, particularly in so far as salaries and certain other conditions of service are concerned. These lower salaries and inferior pension conditions have not only caused dissatisfaction among those already in the Service, but have greatly impeded the efforts of the Colonial Office in filling a number of existing vacancies. The situation has been aggravated by the consistent refusal of the Colonial Office to fill the post of Adviser on Animal Health which became vacant in 1932, since when the Service has been seriously handicapped by the lack of such a "co-ordinating" officer at home.

Having discussed all aspects of the Service at very great length, the committee agreed on the following recommendations, the acceptance of which by the Colonial Office would, they feel, remove most of the present grievances within the Service and facilitate recruitment now and in future years. These recommendations are:—

(*i*) That the initial salaries of officers in the Colonial Veterinary Service should be raised to £600 p.a. in East Africa, and to £630 in West Africa and most other Dependencies.

(*ii*) That these appointments should proceed automatically to a salary of £1,000 per annum, except for efficiency bars at £720 and £840.

(*iii*) That it should be made possible for any officer serving under the old pension conditions to reach the maximum in the long grade of £920 without prejudice to his pension rights.

(*iv*) That the salaries of super scale appointments should range between £1,200 and £2,000 per annum,, according to the responsibilities of the post and to local conditions as they affect the salaries of comparable posts in allied services.

(It is recognised that in the smaller Dependencies it will be unnecessary to appoint a Director of Veterinary Services.)

(*v*) In order to improve the prospects of veterinary officers and to increase the efficiency of veterinary organisation in the various Dependencies, the number of super scale posts should be considerably increased.

(*vi*) That officers in the Colonial Veterinary Service should be given such precedence in the Colonies as will make their status comparable with that of officers of the Colonial Medical Service.

(*vii*) That it would attract young men to the Service if provision were made whereby it would be possible after a period of ten years'service for an officer to retire on a gratuity based on length of service and salary, as is the case with medical officers.

(*viii*) That the post of Adviser on Animal Health to the Secretary of State for the Colonies be filled again at an early date.

(*ix*) That the Colonial Office should use its influence with Colonial Governments to ensure that the veterinary departments are so encouraged, staffed and financed as will enable them adequately to carry out their work.

The committee consider it is essential that the Colonial Office should clearly understand that the N.V.M.A. cannot give that support to the Colonial Veterinary Service which it would wish unless the recommendations set out above are adopted.

It is therefore recommended that a letter should be sent to the Secretary of State for the Colonies requesting a personal meeting with him on the matter and that in the event of an interview being granted, the Association's representatives be the Chairman of the Advisory Committee (Dr. W. R. Wooldridge), Professor W. C. Miller, Lieut.-Colonel H. A. Reid and Mr. John Smith.

It is further recommended that, should it prove advisable, steps be taken to have suitable questions asked in Parliament about the present state of affairs in many of the Dependencies, and that further editorial comment should be made in the *Veterinary Record* at any favourable opportunity.

The Council will be interested to hear that following upon an informal discussion between the Chairman of the Advisory Committee and Professor Miller and senior officials of the Colonial Office, which took place at the request of the latter a few days before the first meeting of the committee, a letter has been received from the Colonial Office intimating that after consultation with the Governments in East and West Africa the Secretary of State had decided that, *as a temporary arrangement*, the initial salaries of officers appointed for service in East Africa shall be raised from £500 to £600 a year, and in West Africa from £550 to £630 a year. The committee are ascertaining what is implied by the phrase "as a temporary arrangement."

In addition to the consideration of Colonial Veterinary Service affairs, the committee have given advice regarding the salary which should be offered for a post as veterinary surgeon to several sugar estates owned by the same company in Trinidad. As a result, the company concerned is now advertising the appointment in the Association's journal at a salary which is £100 per annum above the figure it originally intended to offer before consulting the Association.

The report having been greeted with applause, the PRESIDENT said that he gathered from their reception of it that, like himself, the Council felt that that report was a satisfactory intimation of the continuous extension of the Association's activities.

The report was adopted without discussion, on the motion of Mr. CHIPPERFIELD, seconded by Mr. THOMSON.

Advisory Committee on Poultry Diseases.

This report was read by the SECRETARY and was in the following terms :—

Since the last Council meeting one meeting of the above committee has been held, namely on July 1st, under the Chairmanship of Professor T. Dalling.

The important business was the consideration of a circular letter from the Ministry of Agriculture concerning the carrying out of free blood tests and *post-mortem* examinations at the Ministry's laboratories under Section 24 of the Agriculture Act, 1937, for Accredited Poultry Breeding Stations and for breeding stations accepted under the scheme for a probationary period of one year. This meant withdrawal of the approval of other laboratories for the purposes of the scheme, as the arrangements made by the Ministry provide that blood samples and carcases for *post-mortem* examination from stations recognised by the Minister must be sent to Weybridge.

After a full discussion, it was agreed that a meeting of representatives from veterinary laboratories interested in poultry disease control should be held at an early date and that a detailed report of the opinion of the committee, compiled after the holding of the proposed meeting, should be submitted to the Consultative Committee with a view to a further conference with representatives of the Ministry.

The PRESIDENT said that, in continuation of that report, he would explain to the Council that Professor Dalling attended the last meeting of the Consultative Committee and as the representative of the Advisory Committee on Poultry Diseases he reported certain steps which it was felt desirable should be carried out, and it was

with putting these steps into operation that that report was concerned.

The report was carried without discussion on the motion of Mr. CHIPPERFIELD, seconded by Major MCGREGOR.

Advisory Committee on Parasitic Diseases.

The SECRETARY informed the Council that Major A. C. Duncan, the Chairman of this Committee, had asked him to report that the Committee was continuing its activities, that it was holding a further meeting on the following Friday and that a note on its activities would be incorporated in the Annual Report of the Association.

NEXT MEETING

It was agreed that the next meeting of Council be held in Glasgow during Congress week, namely, at 4 p.m. on Tuesday, September 6th, 1938.

ANY OTHER BUSINESS

Under this heading, the matter having been raised by the PRESIDENT, it was resolved after discussion, on the motion of Professor MITCHELL, seconded by Mr. THOMSON,

> "That the Jubilee Number of the *Veterinary Record* be circulated to all non-members of the N.V.M.A., including those who have graduated since the issue of the 1938 Register, together with a leaflet containing an appeal from the President for new members."

VOTES OF THANKS

A hearty vote of thanks was passed to the Royal (Dick) Veterinary College and to Professor Linton (the Acting Principal) for allowing the N.V.M.A. the use of its buildings on both that day and the previous one, for the purpose of its meetings of Council and Committees.

The President was also warmly thanked for his conduct of the proceedings, which he then declared closed.

MEDICAL RESEARCH COUNCIL

By an Order of the Committee of Privy Council, made after consultation with the Medical Research Council and with the President of the Royal Society, Professor C. R. Harington (Professor of Pathological Chemistry in the University of London) and Professor W. W. C. Topley (Professor of Bacteriology and Immunology in the University of London) are appointed members of the Medical Research Council, in succession to Professor A. J. Clark and Sir John Ledingham, who retire in rotation on September 30th.

N.V.M.A. DIVISIONAL REPORT

North of Scotland V.M.A.*

SPRING MEETING AT ABERDEEN

The Spring meeting of this Division was held in Marischal College, Aberdeen, on Saturday, April 2nd, 1938, when the President, Mr. John Grant, M.R.C.V.S., occupied the chair.

The members present were: Messrs. J. B. Russell, D. R. McRae, J. G. Souter, W. A. R. Ogilvie, D. M. McIntyre, D. Cumming, W. J. B. Robson, W. J. Rice, Wm. Hepburn, D. Clerk, A. Niven, A. Sievwright, J. M. Cummine, Wm. Anderson, R. D. Mackintosh, and George Howie, Honorary Secretary.

The following were present as visitors: Messrs. A. Kerr, R. J. P. Watson, A. T. Mower, D. Walker, W. Jackson Young, and T. Johnston.

The receipt was intimated of apologies for inability to attend from Messrs. A. C. Urquhart, J. Plenderleith, A. P. Steele, J. Anderson, C. Macpherson and H. McVean.

Correspondence.—The minutes of last meeting having been adopted, the following correspondence was submitted by the Secretary:—

(1) A letter dated February 22nd, 1938, from A. Thomson, M.R.C.V.S., Glasgow, regarding a donation to a Fund for providing an At Home at the forthcoming Congress to be held in Glasgow this year. After discussion it was unanimously agreed by the members that the Division should forward a donation of £10 towards the Fund.

(2) British National Committee (Zurich-Interlaken Congress). Two letters were read from the Honorary Secretary of the Committee bringing to the notice of the members the desirability of becoming members; it was agreed by the members to forward from the Division the sum of £5 towards the fund which is being raised to defray the expenses of the reporters at the Congress.

Election of New Members.—Messrs. A. Kerr (Ellon), D. Walker (Newmachar), T. Johnston (Forfar), C. Macpherson (Inverness), R. J. P. Watson (Elgin), A. T. Mower (New Deer), W. Jackson Young (Aberdeen), J. Plenderleith (Lerwick), J. Smith (Inverness), A. C. Urquhart (Dingwall), Mackintosh (Wick) and Shepherd (Fochabers), were elected to membership of the Division.

Observations by the President.—Before calling upon Mr. Walter Moore, B.Sc., B.Sc. (AGRIC.), to give his paper on the sheep tick and observations on its control, the PRESIDENT remarked that he was very glad to see such a large number of members present and he was also very glad

*Received for publication April 30th, 1938—insertion unavoidably delayed.

to welcome several newcomers to the North of Scotland. Mr. Grant went on to say that he had been afraid that the North of Scotland Division was not as alive as it might be and for the past few years the attendance at the meetings had been very disappointing, so much so that he felt that he himself would have to resign from the Division, but if the attendance at the meeting indicated that there might be a revival he now had great hopes that with the coming of new members, the North of Scotland Division might become a rejuvenated and very much alive Division of the N.V.M.A. Great changes had taken place in the veterinary profession and it was up to all members, whether they were whole-time veterinarians or practising members of the profession, to pull together. It was only by attending meetings of the Divisions that all members had an opportunity of gathering together and discussing amicably problems which must arise in the working of the new State Veterinary Service.

The President then called upon Mr. Walter Moore to deliver his address,* which was as follows :—

The Sheep or Grass Tick, Ixodes ricinus L.

The sheep or grass tick, *Ixodes ricinus* L., which is also known as the castor bean tick, is perhaps the most formidable pest with which the hill farmer has to deal.

It is found in many parts of Europe and North America but fortunately it is confined almost entirely to rough grazings. It is stated that it does not survive on arable ground but in the North of Scotland this requires verification. Many farmers have told me that their cattle, which have only been on arable grass, have become infested with ticks. I have checked some of these cases and found that in every case infestation was introduced by putting infested sheep on the field. The engorged ticks dropped off the sheep and conditions, even on second-year grass fields, were suitable for the tick moulting and attacking cattle. This factor is very serious in this district because Mr. J. C. Grant, Lecturer in Veterinary Science, North of Scotland College of Agriculture, has found that red water fever has been introduced and last year several cases of this disease occurred. In addition, all of you are familiar with the sheep diseases which the tick transmits—louping-ill, tick-borne fever and pyaemia, all of which are common in this district.

Control Measures

All the factors for the survival of the tick have not been worked out but the following are recognised as very important:—

(1) Temperature.
(2) Humidity.
(3) Food supply.

The tick undergoes the whole of its development in the vegetative covering of the ground. It is able to withstand very low temperatures; a Russian worker has frozen them for five hours at minus 17° C. and they survived. The optimum range of temperature for tick activity is from about 10° C. to about 20° C.; at temperatures above 40° C. the tick dies. The humidity of the atmosphere has a very important influence. Under conditions of low humidity the tick dies. Generally a humidity of from 80 to 100 per cent. is required for development.

In our climate, optimum conditions appear to prevail for most of the year because in north-east Scotland the tick is active throughout the spring, summer and autumn seasons. It is the micro-climate, the conditions in the vegetation, that is responsible for this, especially on peat moors which remain damp in the driest years.

Where we have optimum conditions in the vegetative covering, the food supply is the remaining factor responsible for the survival of the pest. The tick has no known natural enemies, so that, given a suitable breeding ground, the tick population will be directly proportional to the number of available hosts.

Any bird or mammal will serve as a host for some of the first two stages, the larva and nymph, but the adult female is only parasitic upon mammals. This is a very important factor and allows us to plan a campaign against the pest. If we attack the female and prevent her reproducing, then the race will ultimately die out.

The chief mammalian hosts upon which the tick feeds are deer, sheep, cattle, horses, dogs, hares and, to a lesser extent, rabbits. If we exclude or exterminate all alternative hosts from a grazing with the exception of those which we can treat, then we have a distinct possibility of obtaining control of the pest. The tick cannot travel for more than ten feet under its own powers of locomotion; it is dependent upon its hosts for carriage to fresh pastures.

*Mr. Moore's contribution is published as part of the proceedings of the meeting, as it deals with a problem of apparently considerable local and of some general interest. This problem touches firstly upon the bionomics of a common species of tick concerning which a large amount of information has been amassed by entomologists and, secondly, upon the action of this tick as a disease-vector, upon which a great deal has been learned during the last half-century through the researches of veterinarians and parasitologists. It has been impressed upon us that the short summary presented by Mr. Moore covers somewhat inadequately the knowledge now available on the subject. In view of its importance, therefore, we hope to publish shortly some commentaries from experts upon various aspects of the subject, which will elucidate more precisely the position as it is now known.

Perhaps the greatest problem in control is deer. These animals may have thousands of ticks attached, and I can see no hope of ever tackling the problem on a heavily stocked deer forest. The only way appears to be to shoot down the deer. Hare and rabbits may be kept down to negligible numbers by systematic shooting.

Chemical Treatment

The adult female may be attacked by treating the infested hosts with an insecticide.

The usual method of treating sheep is by dipping. Most of the approved arsenical and carbolic dips have a fairly high efficiency against the immature forms, but only the arsenical dips will give a 100 per cent. kill against the fully engorged female. The ordinary arsenical dips, however, will not prevent further infestation for more than a day or two, so that when using these dips, dipping must be repeated every ten days.

There are now upon the market super-fatted anti-tick dips which will prevent re-infestation for about a week.

We have been conducting experiments upon anti-tick dips and find that contact insecticides are most efficient acaricides. Two of these—pyrethrum and derris—we have found to be very efficacious. These substances are, however, still in the experimental stage and require further investigation.

We have found that derris, when used at a concentration of 1 to 500, will give a 100 per cent. kill of ticks and it appears to give protection against further re-infestation for two weeks, so that serial dipping must be repeated every three weeks.

For cattle, horses and dogs, a weekly washing with derris at this concentration will keep them free from ticks.

The question has often been asked, does serial dipping, *i.e.*, dipping the sheep every three weeks during the tick season, have any detrimental effect upon the sheep? This may be answered by the observation of a farmer, who stated that he had been dipping his sheep every three weeks for two years and he found it much easier to dip his sheep than to bury them.

Mr. Moore's address was very admirably illustrated by excellent lantern slides and specimens. It was greatly appreciated by all present and after a short discussion in which Mr. Anderson, Mr. Robson and Mr. Jackson Young took part, a hearty vote of thanks was accorded to him.

In closing the meeting, the President apologised for the shortness of time available for a proper discussion of the address but he hoped that Mr. Moore might give more observations when he gained some further experience in his experimental work in the control of the sheep tick, as it was becoming a very serious scourge in the North-East of Scotland.

Election of Office Bearers

During the meeting, the following office-bearers were elected :—

President.—Mr. W. J. B. Robson.

Vice-Presidents.—Senior: Mr. A. Niven; Junior: Mr. R. D. Mackintosh.

Council.—Messrs. W. J. Rice, James Anderson, R. E. Drennan, H. McVean and W. Jackson Young.

Honorary Secretary and Treasurer. — Mr. George Howie.

Next Meeting.—It was proposed that the next meeting should be held in October and that the time should again be altered to 2.30 p.m. It was the feeling of the members that an afternoon meeting would be more suitable, especially to the practitioner as he would then have an opportunity of doing any urgent work in the forenoon. It was also unanimously agreed that there should be an open discussion when as many members as possible would talk upon any unusual experience.

G. Howie, *Hon. Secretary.*

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 17th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

Aug. 21st-25th.—Thirteenth International Veterinary Congress, Zürich.

Aug. 26th-27th.—Thirteenth International Veterinary Congress, Interlaken.

Sept. 5th-9th.—Annual Congress, N.V.M.A., at Glasgow.

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N.V.M.A. CONGRESS

Members travelling by rail to the Congress from London are requested to communicate with Mr. H. E. Roberts, District Passenger Manager's Office, L.M.S. Railway, Euston House, London, N.W.1, quoting reference LM3/2/Soc., and indicating the time they will be travelling, when he will be pleased to make reservations for them and, if practicable, ensure that members travelling on the same train shall be accommodated together.

The following are the times of the trains leaving Euston :—

Train Services between London (Euston) and Glasgow.

Train No.		Depart Euston.	Arrive Glasgow.
1	Weekdays	10.0 a.m.	5 p.m.
2	Mondays to Fridays ... "The Coronation Scot."	1.30 p.m. (Seat supplement, 2s. 6d.)	8 p.m.
3	Saturdays Only	1.15 p.m. Up to Sept. 3rd.	9.12 p.m.
4	Fridays Only	9.15 p.m. (Sleeping Car train.)	6.19 a.m.
5	Weekdays ... ... (Fridays excepted)	9.25 p.m. (Sleeping Car train.)	6.25 a.m.
6	Weekdays	11.45 p.m. (Sleeping Car train.)	9·35 a.m.
7	Weekdays	12.20 a.m. (Sleeping Car train.)	9.38 a.m.
8	Sundays	11.10 a.m.	7.7 p.m.
9	Sundays	11.20 a.m.	7.20 a.m.
10	Sundays	11.35 a.m.	8.35 p.m.
11	Sundays	9.30 p.m. (Sleeping Car train.)	7.15 a.m.
12	Sundays	11.45 p.m. (Sleeping Car train.)	9.35 a.m.

Seat supplement on No. 2 train—The Coronation Scot—2s. 6d. each. Seats on this train must be reserved in advance.

Sleeping berth charges, 1st Class, £1 1s.; 3rd Class, 7s. 6d.

Monthly Return Rail Fares—Euston—Glasgow :—1st Class, £5 5s. 6d.; 3rd Class, £3 10s. 4d.

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The Cruise

For the cruise which members and their ladies attending Congress will take on September 8th, the party will embark on one of the L.M.S. luxurious Clyde steamers.

The steamer will depart from Bridge Wharf, on the south side of the river next to King George V Bridge, at 10 a.m., and the following points of interest will be passed on the river before reaching the open Firth at Greenock.

The first of these, on the south bank, is Kingston Dock—Glasgow's first and smallest dock—opened in 1867. As far as Govan Ferry, on either side of the river, will be seen the wharfs used by the coastal and foreign ships. Fairfield shipbuilding and engineering yard will be seen on the south bank at this point, where a new seven million pound battleship is in the course of construction. Further down, on the north bank, is Meadowside granary, capable of storing 31,000 tons of grain, hoisted from the holds of the ships by suction elevators, and Merklands cattle wharf, one of the Ministry of Agriculture's lairages. From this point onwards, on both banks, shipbuilding yard after shipbuilding yard follow each other in rapid succession. In John Brown's yard, the huge hulk of the Cunard White Star liner, "Queen Elizabeth," which will be almost ready for launching, will be seen on the north bank, opposite the River Cart, into which she will be launched. It is interesting to note that on the occasion of the launch of the sister ship, "Queen Mary," the actual distance across the river which the vessel travelled, in excess of the calculated distance, was 15 inches. On the south bank, from this point, is passed Erskine Ferry, with the Erskine Hospital for limbless soldiers set back in the trees, and with the Kilpatrick Hills overlooking the other side of the river, a brief glimpse of the Clyde, as it was before the advent of shipbuilding, may be gained. Between Bowling and Dumbarton Rock on the north bank of the river is an obelisk erected in 1839 to the memory of Henry Bell, whose little vessel, "The Comet," was the pioneer of passenger craft, driven by steam power, in 1812. Dumbarton Rock is a land-mark on the river which has been a military garrison during the greater part of Scottish history. Beyond the town of Dumbarton, Ben Lomond can be seen on a clear day. A little further down is the village of Cardross; nearby is Cardross Castle, where King Robert the Bruce died in 1329. Over on the south bank again, we come to Greenock. The Clyde at Greenock is about three miles wide, and at this point is the well-known tail of the bank anchorage for ocean-going vessels. Opposite Greenock is to be seen the town of Helensburgh, situated at the mouth of the Gareloch, in Dumbartonshire, which loch extends inland for about ten miles.

On leaving Greenock, the steamer has Renfrewshire on the left and Dumbartonshire on the right. On the Renfrewshire shore will be seen Fort Matilda, and adjacent thereto, a low-lying red stone building which is the Royal Naval Torpedo Factory. The steamer now calls at Gourock, on the same shore, with its L.M.S. pier, at 12 noon.

Opposite Gourock is the village of Kilcreggan in Dumbartonshire. Leaving Gourock, the steamer crosses the river to the Argyllshire shore. During the crossing, on the right of the vessel, will be seen Loch Long, which extends for 20 miles inland, and immediately thereafter the short Holy Loch, at the mouth of which is situated Hunters Quay, the headquarters of the Royal Clyde Yacht Club, and a noted yachting centre. Next are passed the piers of Kirn and Dunoon. Immediately on passing Dunoon Pier will be observed the statue of Burns' Highland Mary, situated on the Castle Hill, and continuing along this shore the villages of Innellan and Toward are left behind before the steamer turns into Rothesay Bay, where is situated the town of Rothesay on the Island of Bute.

"It's a bonnie bay at morning,
And bonnier at the noon,
And bonniest when the sun draps
And red comes up the moon,
When the mist creeps o'er the Cumbraes,
And Arran peaks are grey,
And the great black hills, like sleeping kings,
Sit gran' roun' Rothesay Bay."

For centuries the Island of Bute was ruled by the Norsemen, and, according to tradition, the first Castle of Rothesay was built by the Norwegian King Magnus Barefoot in the year 1098. The island was subsequently wrested from the Norsemen by the Stewarts. Rothesay is now known as the Madeira of Scotland, and is the most popular of Clyde coast resorts. The town has numerous hotels and boarding houses and caters during the summer for a large number of holidaymakers.

On leaving Rothesay Bay, Loch Striven, which extends inland for twelve miles, is on the left of the steamer, and after passing the mouth of this loch, entry is made to the Kyles of Bute. Proceeding through the Kyles of Bute, the Island of Bute is on the left and Argyllshire on the right. On the Argyllshire shore is the Pier of Colintraive, which serves the population in the glens lying inland. The route now lies between the Burnt Islands, and on these islands the Earl of Argyll landed in 1685 to commence his unsuccessful rising against the Government of King James VII. On the larger of the islands, he left a garrison with a large supply of gunpowder and arms, which, on the approach of the King's Forces, were blown up, and from these circumstances the little archipelago takes the name of "Burnt Islands." After passing between the Burnt Islands, Loch Ridden is seen on the right and on the left are two decorated boulders known as the Maids of Bute. On the Argyllshire shore is the mansion of Glen Caladh and the villages of Tighnabruaich, Auchenlochan, and Kames. Sailing onwards, the steamer leaves the Kyles of Bute and enters Inchmarnock Water. A splendid view is now obtained of the Peninsula of Kintyre on the right, and the Island of Arran ahead. On the Island of Arran will be seen the mountain of Goatfell, rising 2,866 feet above sea level, and towering prominently over its neighbours. The cruise is continued along the west side of the Island of Bute and round Garroch Head, which is the most southerly point of the island. The Firth of Clyde is crossed to the Ayrshire shore, meanwhile passing between the Greater and Lesser Islands of Cumbrae. On the former island is to be seen the town of Millport. The boat now proceeds through Largs Channel, with the Greater Island of Cumbrae on the left and Ayrshire on the right. On the Ayrshire shore the village of Fairlie, and the town of Largs, both L.M.S. rail and steamer termini, are passed.

On leaving Largs behind, the steamer passes over the measured mile, denoted by two posts, one mile apart, on the shore, where new ships run their speed trials, and the cruise is continued along the Ayrshire shore, past the village of Wemyss Bay, with its L.M.S. rail and steamer terminus, and the village of Inverkip, also the Cloch Lighthouse, after which Gourock is reached at 3.30 p.m.

THIRTEENTH INTERNATIONAL VETERINARY CONGRESS

We are asked by the British National Committee for the above Congress again to give details of arrangements made for the journey returning home *via* Freiburg, the committee being anxious to make up the party numbers as the very early reservation of the requisite hotel accommodation is essential. Immediate application should therefore be made to the American Express Company, 6, Haymarket, London, S.W.1. The itinerary is as follows:—

August.

Fri. 19th.—Leave London (Victoria) at 2 p.m. *via* Dover/Calais to Paris—HOTEL GRAND.
Sat. 20th.—Paris (Est) depart 8.10 a.m. by day train to Zurich, arrive 4.14 p.m.
Sun. 21st. to Thur. 25th.—In Zurich. International Veterinary Congress—HOTEL DOLDER GRAND.
Fri. 26th.—Proceed to Interlaken.
Sat. 27th.—In Interlaken at leisure—HOTEL VICTORIA JUNGFRAU.
Sun. 28th.—*Via* Berne and Zurich to Constance—HOTEL INSEL.
Mon. 29th.—In Constance at leisure.
Tues. 30th.—Afternoon train to Bale and Freiburg I/B.
Wed. 31st.—In Freiburg—HOTEL ZAHRINGERHOF.

September.

Thur. 1st.—Morning train to Heidelberg.
Fri. 2nd.—In Heidelberg at leisure—HOTEL EUROPAHOF.
Sat. 3rd.—To Frankfurt A/Main.
Sun. 4th.—In Frankfurt at leisure—HOTEL CARLTON.
Mon. 5th.—Morning train to Wiesbaden—HOTEL NASSAUERHOF.
Tues. 6th.—Rhine steamer to Cologne—HOTEL DOM.
Wed. 7th.—Leave Cologne *via* Ostend/Dover to London arriving in the evening.

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PERSONAL

Marriages.—Evans—Evans. On July 25th, at Aberystwyth, J. T. R. Evans, Sudan Veterinary Service, to Mair Evans, Cefn Gornoeth, Llangadock.

Seymour Smith—Greener. July 23rd, 1938, at Llanaber Church, Barmouth, E. Spencer Seymour Smith to Averil Wynnifred Greener. Miss A. W. Greener, M.R.C.V.S., DIP. BACT. (London), commenced her veterinary studies at the Liverpool Veterinary School and qualified from London in 1930; subsequently she was on the staff of the Royal Veterinary College, London, and the Wellcome Research Laboratories, Beckenham.

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LEGAL NOTES

Treatment of a Cat: Claim Against Veterinary Surgeons Fails

Successful Defence Undertaken by "Mutual" Society

On Wednesday, July 20th, at the County Court, Bromley, Kent, a case was heard in which Mr. Alex. Damiano, of 47, King's Hall Road, Beckenham, sued Messrs. A. Cornish-Bowden and S. F. J. Hodgman, M.S.R.C.V.S., for £15 5s. 0d., being damages in respect of their alleged negligent treatment of a cat which had to be

destroyed. There was a counter-claim for 33s. in respect of fees.

Mr. Comyns Carr, K.C., and Mr. P. Quass, were for the plaintiff, and the defendants were represented by Mr. John Flowers, K.C., and Mr. Frank Levy. Both Mr. Cornish-Bowden and Mr. Hodgman are members of the National Veterinary Benevolent and Mutual Defence Society and the defence was undertaken and supervised by the Society, including the engaging of K.C., counsel and expert witnesses.

Mr. Comyns Carr said that the plaintiff alleged that he retained and employed the defendants as veterinary surgeons to attend and treat the cat which was suffering from an abscess after injury by another cat. He alleged negligence and said that the cat was returned cured when it was in a collapsed and weak state and suffering from a worse abscess than the original one. As far as money was concerned the matter might be described as trifling, because no particular market value was ascribed to this cat. Plaintiff put a value of £10 on it, but that was purely sentimental value, the cat being of no particularly valuable breed. The additional £5 5s. 0d. claimed was in respect of fees paid to another veterinary surgeon after the cat had been returned to the plaintiff. The defendants put in a defence and counter-claim, denying negligence. They admitted the cat to be in a weak state, but denied everything else, suggesting that the necessity for the destruction of the cat arose through the treatment it received after it had been returned to its owners. Of the £1 13s. 0d. claimed for fees due to them, 10s. 6d. was for destroying another cat. Mr. Damiano had two cats, a black one called "Nick" and a tabby semi-Persian called "Chunkey." On the afternoon of Sunday, April 10th, these two animals were set upon by a stray cat in the garden and injured. The black one was so seriously injured that Mr. Cornish-Bowden, who was sent for, advised immediate destruction. It was later found that Chunkey had also been injured (presumably in the same way) and that it had a comparatively small wound on its back. This was to some extent septic and Mr. Cornish-Bowden said it ought to be lanced and he had better take it to his surgery, and this was agreed to. It was not known what treatment was given to the cat at the surgery, but Mr. Damiano or his housekeeper, Mrs. Martin, who telephoned daily, were told that it was going on all right, but that it would not eat. On one occasion the kennel maid enquired what the cat was usually fed on and said she would try it with the same food. On April 19th, Mr. Damiano himself rang up to enquire in the usual way and was told that the cat was now all right and that Mr. Cornish-Bowden said they could take it home. He went straight away to fetch it, in a taxi, and was handed the cat in a basket. He glanced at the cat and noticed the small wound which had healed up, but enquired what was the white matter to be seen round the wound. He was told that it was ointment which should just be wiped off occasionally with cotton wool—nothing else was required. He noticed also that the cat was weak and when he got home he put it down on the garden path to walk into the house, but Mrs. Martin had to carry it in. It would only eat a little and cried a lot. Later it was put to sleep on an eiderdown on Mrs. Martin's bed, but it was unable to sleep and appeared to be in pain, as it cried during the night. Mr. Damiano found that the eiderdown was heavily stained with blood and pus. In the morning they examined the cat more closely and found a much larger abscess than the first, about two inches below the original one, which had obviously spread from the first owing to the fact that the poison had not been got out of the system. Whether Mr. Cornish-Bowden ever did lance the first wound was not known, but the external wound had been healed with ointment and had confined the poison in the body and caused the other abscess. When told of this by telephone Mr. Cornish-Bowden asked for the cat to be sent back to him, but Mr. Damiano decided to call in another veterinary surgeon. Mr. Richardson was then called in and he treated the cat, but on April 25th the animal had to be destroyed owing to septicaemia. Another veterinary surgeon, Mr. Bell, was also consulted, but counsel intimated that he did not propose to call him as a witness. A colleague was always naturally somewhat reluctant to give evidence in any case involving an allegation of negligence, and that reluctance was fully shared by Mr. Richardson, who, however, would be called.

Mr. Damiano, in evidence, said that he had a good deal of experience of animals and was very fond of his two cats. He paid Mr. Richardson four guineas for his services, and Mr. Bell a guinea. Questioned regarding the value of the cat, Mr. Damiano said that its market value was not £10, but that he would have been ashamed to accept £100. It came to him as a stray, and as it was rather a nice cat they put up a notice on the gate, but no one ever claimed it. After he had fetched the cat from the surgery he noticed that it was weak, and also that it limped and that there was some puffiness about its hindquarters. It ate a very little fish or meat, but appeared to be in pain and cried it it was touched.

Mr. John Flowers (cross-examining): Do you know that Mr. Cornish-Bowden has been in practice at Beckenham for 40 years?—I suppose so. He is certainly well known there.

What do you suggest that Mr. Cornish-Bowden did wrong?—I suggest that he took the cat away with an abscess and did not treat it. He closed the wound without opening it first.

Did not Miss Whicher, the head kennel maid, say that it would not eat and should be taken home?—No.

Did it not eat a large quantity of steak or cod when you got it home?—No, a very, very small quantity.

Was it not gorged when seen by a veterinary surgeon?—I believe one did say it was gorged.

Plaintiff agreed that he refused to send the cat back to Mr. Cornish-Bowden.

Replying to Mr. Comyns Carr, Mr. Damiano said that the last time he heard about the cat's food was on the second or third day it was there, when he was told it was not eating, but had taken a little milk. He had consulted Mr. Cornish-Bowden on many occasions previously and though once before he had some possible grounds for complaint he had thought that was just bad luck, and went back several times after that.

Evidence was also given by the housekeeper, Mrs. L. E. Martin. She said that on the day before Good Friday on hearing that the cat would not eat, she offered to take some food down to the surgery, but the young lady at the other end of the telephone said that could not be done. The young lady said: "Don't worry; the cat is all right." Mrs. Martin mentioned

that the cat cried piteously all through the night after being brought home from the surgery. She stated that after refusing to send the animal back to the surgery she got in touch with various other veterinary surgeons, but when the circumstances were explained to them they refused to come. They spent five days carrying out the instructions of Mr. Richardson and Mr. Bell, but then the cat had a convulsion and was destroyed.

Replying to Mr. Flowers, the witness said that she and Mr. Damiano agreed that Mr. Cornish-Bowden should take the cat away for treatment. When it returned on the 19th it had an abscess about two inches below the original one and she thought that while the first had been caused by the top jaw of the cat, the second was caused by the lower jaw. She had to coax it to get it to eat anything.

Mr. T. Jenkinson Richardson, M.R.C.V.S., of 1, The Avenue, Beckenham, deposed that he was called in on April 20th and saw the cat at about 10.45 a.m. The animal was in a recumbent position and was suffering from a subcutaneous abscess in the left sub-lumbar region. This was about two to two-and-a-half inches below a healed wound on its back, and there were several bite wounds in the region of the tail. An inspector of the R.S.P.C.A., Mr. Munnelly, was, he believed, present at the examination. The abscess was oozing and it burst when he put his hand on it. The surrounding skin was necrotic. He was given to understand that attempts had previously been made to get the cat to feed, but food was not a primary consideration when an animal was in a septic condition. He put it on Brand's essence and brandy. He saw the cat twice daily and on one other occasion Mr. Munnelly was present. On the afternoon of the 20th, when he saw the cat with Mr. Bell, its temperature was 105° and the condition which eventually necessitated destruction was septicaemia.

Replying to Mr. Comyns Carr, Mr. Richardson said that if a cat was given to him for treatment suffering from a small abscess he would clip the hair away, dress the wound and plug it to ensure drainage. If necessary he would enlarge it. The antiseptic plug was inserted to keep the wound open so that it could heal from the bottom, but no one could prevent absorption of septic bacteria into the system, when an abscess might occur in another part of the body.

Mr. Flowers (cross-examining): As cats when removed from their usual surroundings often will not eat, it is sometimes very important to keep them there?—I think that is correct.

Replying to Mr. Flowers, Mr. Richardson said that when he saw the cat on April 20th the original abscess had been treated and had cleared up. Nobody in the world could prevent a secondary abscess coming and it was possible for these abscesses to come up very quickly. He could not say whether the cat was gorged as he did not examine the stomach, but if it had fed heavily he agreed that it might be a bad thing.

Mr. Flowers: So far as you know, could you say that Mr. Cornish-Bowden had been in any way neglectful?—No.

Mr. Comyns Carr: In such a case as this, does not a secondary abscess arise from the fact that the poison has not successfully been got out of the first wound?—It is due to the fact that the poison from the first wound has not been got away from the circulation or from the lymphatics.

His Honour: Is there any real difference between the causes of a secondary abscess arising within a few inches and one arising in a different part of the body?—It would occur more quickly in a near spot, but the bacteria would be the same. If the skin had been damaged, for example through bruising, one might expect the secondary abscess to occur there.

Questioned further by Comyns Carr and Mr. Flowers, Mr. Richardson said that a secondary abscess might arise within twelve to fifteen hours. In the cat in question it might have been possible for it to escape detection on the day prior to his examination of it, but it was impossible to say when it was first discernible.

Addressing his Honour, Mr. Flowers submitted that there was not a vestige of evidence of neglect.

His Honour (to Mr. Comyns Carr): What evidence is there of want of skill here?

Counsel suggested that they did not extract all the pus from the wound, and that the animal visibly was not in a fit state to be discharged from hospital.

Mr. Flowers said there was evidence that the abscess was cleared up. It was also plain that the cat was weak from lack of food. Defendants had the cat in to clear the abscess and they did so.

His Honour held that there was no case for the defendants to answer. He described it as "a most unfortunate incident," adding that Mr. Damiano and Mrs. Martin, both lovers of animals, were to be commiserated with. His Honour alluded to "the very fair and very valuable" evidence given by Mr. Richardson. The animal was probably weak owing to its abstinence from food and they had heard that the early emergence of the secondary abscess did not necessarily signify that the first abscess had not been properly treated.

Judgment was given for the defendants, with costs. Mr. Comyns Carr submitted that there should be no costs as the case was being defended by the Mutual Defence Society. His Honour held that this did not affect the issue and said he would allow a fee for one expert witness for the defence.

It may be mentioned that the expert witnesses present on behalf of the defence were Professors McCunn and Wooldridge, Mr. H. E. Bywater and Mr. W. Woods—the last-named making the journey at his own expense, as President of the Society, to supervise the final defence plans. It is also worthy of note that the cost to the Society will be quite considerable, in spite of the fact that the case was won—a point to be remembered by those who, ill-advisedly not as yet being members of the Society, may have to fight similar actions on their own.

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CONFERENCE OF COLONIAL DIRECTORS OF AGRICULTURE

(*Continued from page* 997.)

On Wednesday (of last week) the Colonial Directors of Agriculture, at their Conference in London, discussed the part which animal husbandry can play in the evolution of systems of mixed farming under tropical conditions. Certain of the difficulties, particularly those connected with the provision of the necessary stock and implements and the training of the native cultivator for this new form of agriculture, were considered. Emphasis was laid on the necessity for extensive preliminary experiment and the need of special provision for training native

cultivators in the new methods when they had been evolved.

The afternoon session was devoted to the discussion of the part which could be played by the Department of Agriculture and by Veterinary Departments in efforts to improve nutritional conditions among natives in tropical dependencies. This session was attended by Sir John Orr, Director of the Rowett Research Institute; Dr. A. J. O'Brien, Medical Adviser to the Colonial Office; and representatives of the Colonial Education Committee. Attention was directed to the necessity for endeavouring to harmonise the provision of an improved dietary with the limitations laid down by agricultural conditions. Many instances were given of the effect which defective nutrition had on the physique of native peoples.

It was emphasised that much consideration was being given to nutrition problems in the United Kingdom and the Dominions as well as in the Colonies, and that the different efforts in this direction might be considered parts of a co-ordinated whole resulting from recent discoveries in relation to nutrition which were of profound importance. It was pointed out that under Colonial conditions the work of Agricultural and Veterinary Departments in improving nutrition was of primary and fundamental importance, and that this work should be closely correlated with the work of Departments of Public Health and with efforts to popularise the knowledge gained through the medium of education.

At a later session the question of education and training in agriculture in the Colonial Dependencies was discussed. Progress made was reviewed. It was stated that the work of the Imperial College of Agriculture in Trinidad is of first class importance in training agriculturists and is being supplemented by parallel provision in a number of Dependencies for training at a somewhat lower level. Plans have now been approved whereby officers who have been trained at these local institutions may be selected to receive higher training at Trinidad. It was emphasised that the training of the smallholder should bear a practical relationship to the conditions under which they normally lived and should be so directed that when their training was finished pupils should return to their homes with no distaste for their original conditions, but able and ready to take a leading part in the general movement for rural improvement.

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THE VETERINARY COLLEGES AND ANIMAL HOSPITALS OF INDIA

Addressing the Royal Veterinary College Medical Association on the above subject, on Tuesday, May 17th, Emeritus Professor Sir Frederick Hobday gave an account, which was freely illustrated by means of the epidiascope, of the visits paid by him to the veterinary colleges of India when he journeyed there as one of the party of delegates of the British Association of Science who, in November last, attended the Silver Jubilee Congress of the Indian Association of Science which was held in Calcutta in January of this year.

Sir Frederick confined his remarks to the veterinary colleges and stud farms which he was privileged to visit, and illustrated not only the College buildings, but also the principal breeds of cattle and other features which were allied to the great work which the Indian Civil Veterinary Department and the members of the veterinary profession (both Ms.R.C.V.S. and graduates of the respective Indian Colleges) have done and are doing at the present time, for the benefit of the Animal Husbandry and the control of epidemics amongst the millions of animals which comprise the native stock of that vast continent.

Sir Frederick explained that he had deliberately asked that the date of this address might be postponed in order that the Association might have the presence at the meeting not only of Colonel G. K. Walker, the former Principal of the Punjab Veterinary College, but also of Professor Walter Taylor the present Principal; together with Sir Leonard Rogers, Captain Cross and Captain Dunlop Martin who each had in days gone by played such a large pioneer part in the building and equipment of the Government of India's world renowned and extensive Imperial Bacteriological Laboratory of Muktesar.

He then proceeded to relate, in some detail, descriptions of each of the five veterinary colleges, commencing with that of Bombay (the port of landing in India), whose acting Principal, Professor Mohey-Dean—and Professor Nair who holds the chair of surgery—had met the ship with a message of welcome and an invitation from the staff and students. Special trains had been provided for the Congress delegates, who after being present at an official reception of the university authorities, and spending several days in visiting the principal sights of Bombay were taken to see the new University of Hyderabad Deccan (in process of building), and here an opportunity was given through the courtesy of Mr. A. G. Baig (G.M.V.C.) the Municipal Veterinary Officer of this city, to visit several of the Indian veterinary hospitals both military and civil; the former being those of the well known Hyderabad Lancers, and the latter provided by the forethought of the Government for the benefit of the sick cattle of the Indian villagers. The Indian hospitals of either of these classes in every province were excellently equipped and planned, being staffed in every instance by fully qualified veterinary surgeons. In speaking of these Sir Frederick emphasised this latter fact—contrasting it with the system which in England still permits unqualified persons to establish hospitals for animals without the control, or even supervision, of a veterinary surgeon for the diagnosis and treatment of diseases from which the animals are suffering. This part of the lecture was illustrated by pictures showing not only the Bombay College but one of the Government veterinary hospitals; and also one of the "Pinjrapoles" which consist of compounds and buildings provided by philanthropic Hindus where sick and wounded cattle (which the Hindu does not permit to be destroyed) are kept—well fed and otherwise well cared for, until death, or old age, or other causes, ends the scene.

Between Hyderabad and Delhi the delegates received official welcomes from various universities—some having degrees conferred upon them; and at Delhi, under the guidance of Sir Arthur Olver, visits were made to the various hospitals in the neighbourhood of the city, with an especially instructive visit to the extensive and well managed Government cattle breeding farms of Pusa and Hissar. The latter alone contains nearly 10,000 animals of which some 6,000 are cattle and 2,000 sheep, all of the pure Indian breeds, under the veterinary care of Mr. Ghulati, M.R.C.V.S., with four qualified Indian assistants.

In paying tribute to the equipment and good management of Indian Government stud farms, numerous illustrations were interposed by the lecturer, these confirming beyond dispute a remark which the lecturer made, that there was no need whatever for India to go outside its own confines to obtain well-bred cattle and other farm stock, so long as the breeding and animal husbandry side was properly organised and managed. Here Sir Frederick spoke of the pleasure with which the whole of the veterinary profession would learn that, for the future, the Section of Animal Husbandry and Genetics had been placed under the control of the Veterinary Department.

The next place of importance from the veterinary aspect was the Punjab Veterinary College at Lahore; a College of University status, which in the effectiveness of its original education, owed much to Colonel G. K. Walker. The Acting Principal is Captain Ulric Walker, Principal Walter Taylor being the Chief of the Punjab Civil Veterinary Department and Professor Aggarwala, M.R.C.V.S., occupying the Chair of Animal Husbandry. A four years' course is given there and the pictures which were put on the screen illustrated the completeness of its equipment with up-to-date laboratories, operating theatres, dissecting rooms, X-ray department, etc., with a very fine hostel for the students and a large hospital for animals sent in for treatment by the Lahore Branch of the Society for the Prevention of Cruelty.

The lecturer commented that this system of arranging that the hospital of the S.P.C.A. in each city where there is a veterinary college should be built adjoining the latter is a most excellent idea, for not only does it provide the natural material for the professors and senior students for class purposes, but it ensures that night or day there is always efficient qualified help at hand for any urgent or other cases which may be brought in. It is worth while noting that in the Province of the Punjab alone, there are over 300 veterinary hospitals, and 1,250 dispensaries—all under qualified veterinary supervision—and that the numbers of animals treated annually average some one-and-a-half millions.

After several days at Lahore, the journey was continued to Calcutta, in which city (also possessing a veterinary college) the week of Congress was spent. While there Sir Frederick was the guest of Mr. Percival J. Kerr, the Chief of the Bengal Civil Veterinary Department. During that week, under Sir Arthur Olver's guidance, a visit was made to Patna College, whose Principal, Professor Malik, M.R.C.V.S., was an old London student, the Indian Civil Veterinary Department being under the control of Major Riley, M.R.C.V.S. The Patna College, with a three years' course pays especial attention to dairy farming, having a very large dairy and herd of milch cattle within its precincts. After the Congress was finished the delegates again boarded the special train which the Government had provided for them and proceeded south as far as Madras and Mysore, this giving an opportunity to visit the very fine Madras Veterinary College. The Principal of this College is Captain Hurley, the Indian Civil Veterinary Department being under the charge of Major Saunders, O.B.E. At this College an opportunity was afforded for a prolonged conference with the Minister of Agriculture for the Province of Madras—a conference from which there is reason to hope a good deal of mutual benefit, both to Agricultural and Veterinary Science, ensued.

After a series of pictures of the Madras College illustrations were shown of the Imperial Bacteriological Laboratory at Muktesar, a description of which was left by the lecturer to the speakers who followed, all of whom had, at some time or other, been pioneers in its establishment. The contributions made by Colonel Walker, Principal Taylor, Sir Leonard Rogers, Captain Cross and Captain Dunlop Martin were all listened to with the greatest interest by the students present; and hearty votes of thanks to those who had contributed to the very interesting evening were passed with acclamation.

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ENTOMOLOGY IN INDIA

The past, present and future of entomology in India formed the subject of Mr. M. Afzal Husain's presidential address to the Section of Entomology of the Silver Jubilee Session of the Indian Science Congress Association. During the course of this address it was stated that the number of the existing species of insects in India cannot be less than 2·5 millions, but only one in 60 is known. The condition of Indian insect collections is also very unsatisfactory, and most of the "types" of Indian insects have gone out of the country. In the museums there is scarcely one "type" for every hundred species described. Recalling that the Indian Museum laid the foundation of agricultural entomology in 1884 and that the work has been carried on by the Imperial Institute of Agricultural Research at Pusa and fostered by various other bodies, it is also noted that Ronald Ross and the workers who followed him made most valuable contributions to medical entomology. Veterinary entomology, however, has been greatly ignored, and it is only lately that an entomologist has been appointed to study insect pests of domesticated animals. In education, entomology has long been neglected and even in agricultural colleges it is only within the last few years that entomological teaching has received some attention. In most medical and veterinary colleges, it has no place in the curricula. India is equally behind in entomological literature and there are few catalogues of insect groups.

According to many authorities, among the sciences of economic value, entomology perhaps ranks first in importance in India. More than one hundred million people suffer from malaria every year and more than one million succumb to its effects. *Anopheles* brought about the decay of the Greek and Roman civilisations, and is to-day one of the major obstacles to progress in India. It has been computed that the sugar cane pests alone cause an annual loss of 300,000,000 rupees, while the hide industry suffers an annal loss of 1·5 crores of rupees from the ox warble fly. The annual loss caused to India by insects has been put at 200 crores of rupees, and a loss of more than a million and a half human lives.

Advancing civilisation is producing conditions most suitable for insect multiplication and the public must be made to appreciate the importance of insect study. Entomology must take its place in the schools and universities, agricultural, medical and veterinary colleges, and funds should be provided to develop pure and applied entomology.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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TUBERCULIN TESTING

To the Editor of the Veterinary Record

Sir,—I offer no apology for again contributing to the correspondence on this important subject. Many worthy letters concerning it have appeared in the *Veterinary Record* of late; among them I would particularly call attention to one which appeared on May 28th last from Mr. E. F. Peck asking for "real statistical evidence showing that the double intradermal test is more accurate than the single test," and to that of Mr. H. C. Watson calling attention, in your issue of July 16th, to the fact that these statistics have not been supplied. If any gentleman will *specifically* state the kind of statistics he requires, I will, while not for a moment posing as an expert, do my best to cull from many thousands of my records, the information required.

It appears to me that the pathological condition observed after an injection of tuberculin, whichever form is adopted, is not thoroughly understood.

If Professors Buxton and Dalling or Mr. Glover would be gracious enough to enlighten us on the following points we should all be very grateful:—

(1) The composition of tuberculin.

(2) The morbid anatomy and pathology of the reaction swelling.

(3) Whether they have been able to assess the degree, or stage of tuberculosis present, by the character of the reaction.

Koch's work on tuberculin showed that there could be separated from tubercle cultures, substances the necrotic action of which on certain tissues was capable of explaining a great pathological feature of tuberculosis.

Hunter stated that tuberculin consisted chiefly of (1) albumoses, (2) alkaloidal substances, (3) extractives, mucin, inorganic salts, etc., (4) probably a toxin.

In the subcutaneous tuberculin test, where the rise in body temperature denotes a reaction, it is more readily understood, as stated by Koch, that the resulting temperature is caused by the action of the tuberculin upon the site of infection.

If this be correct, it may satisfactorily solve the problem of the cow which has become affected with tuberculosis and yet ultimately fails to give a temperature reaction to the subcutaneous test. I have experimented with many such cases, by doing the subcutaneous and intradermal test every six months. The majority of those cases continued to give no reaction to the subcutaneous test, but gave a definite reaction each time to the double intradermal test up to time of slaughter. *Post-mortem* examination revealed advanced tuberculous lesions in every case.

Synthetic medium tuberculin, in my opinion, is a great advance on the old tuberculin, but many reaction swellings are now very much smaller than with the old method and in the absence of *considerable experience,* become somewhat difficult to determine.

It cannot be too deeply stressed that it is the character and not the size of the swelling which denotes a reactor.

If the gentlemen named above will be so kind as fully to explain the three points raised, I am sure that those now in doubt, would then be able at once to recognise the CHARACTER OF SWELLING to look for.

Concerning the question as to the necessity of the second injection, I think with our present knowledge it would be unwise to dispute this, if by its adoption only *one further* reactor is discovered in a herd. Professor Buxton used to say that the first injection was a "sensitising dose" for the second injection, and I have not heard that he has changed his theory.

I agree with Mr. Watson that if you possess SUFFICIENT CONFIDENCE, it is very seldom that a reactor is revealed, at the third visit, which did not give some indication of being a reactor at the second visit.

Yours faithfully,
J. C. Coleman.

Swindon, Wilts.
July 28th, 1938.

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'OVER-STOCKING" OF COWS AND PAIN

To the Editor of the Veterinary Record

Sir,—In the course of his paper published in the July 23rd issue of the *Record,* I observe that Mr. W. R. McKinna, after describing "over-stocking" as a most undesirable practice, goes on to say that, although it "at once suggests a painful condition," if "the cow can move about, appears bright and chews the cud, one may feel that it is difficult to substantiate a case of actual cruelty."

I am wondering whether Mr. McKinna has really thought the problem out, or is he just repeating what he has so often read and been told? Does he really think that pain stops the digestive process (for chewing the cud is only a phase of that process)? Then, what exactly does he mean when he suggests that if an animal "can move about" it is in no pain? (What about a horse with colic?) Although I spent the whole of my working life among cattle I am afraid I could not recognise the brightness which would indicate freedom from pain.

Unless we present a united front on this matter of "over-stocking" we shall never convince the lay mind of its futility and cruelty. It would be interesting to have personal experience from the human female, and from medical authorities on this problem, which can only be solved by applying our knowledge of comparative pathology and zoology (subjects untaught at the colleges in my day) to the case of the dumbest of animals, the cow.

Yours faithfully,
R. Glave Saunders.

Little Haccombe,
Exeter.
July 24th, 1938.

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CASTRATION BY BURDIZZO FORCEPS

To the Editor of the Veterinary Record

Sir,—During the past few months I have come across, both in Spain and Morocco, several horses and ponies, five to seven years old, that have had their spermatic cords crushed with Burdizzo forceps. The testicles had atrophied, and in one case felt as hard as stone.

I should be much obliged if any readers of your paper, having experience of this operation

on MATURED *horses and ponies*, would give me information on the following points:—

(1) Is the operation as satisfactory as ordinary castration?

(2) Is there much swelling of the testicles and pain after the operation?

(3) What is the average period after the operation before the animal is fit for light work?

(4) How does one describe a horse that has been "Burdizzoed"? It cannot be described as a gelding.

Yours faithfully,
F. C. O'RORKE,
Lieut.-Colonel.

The Veterinary Hospital,
Rosia,
Gibraltar.
July 24th, 1938.

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I.—TREATMENT OF TRICHOSTRONGYLOSIS; II.—CULTURAL METHODS IN THE DIAGNOSIS OF BOVINE TUBERCULOSIS

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—The *Veterinary Record* is to be congratulated on the abstracts and annotations which, during the last few years, have become such a valuable feature of its contents.

I have recently had to combat some serious outbreaks of trichostrongylosis (verified by expert examination) in young cattle. Being interested by the anthelmintic tests of tetrachlorethylene and its effect on parasitic nematodes in sheep (*V.R.* June 18th, 1938. Orlepp and Mönnig), I tried out this drug on these cattle with excellent effect.

The annotation by R. E. Glover on "Cultural Methods in the Diagnosis of Bovine Tuberculosis'" in the current issue, was of more than passing interest to me on account of the opinion I hold, that unless laboratory methods are used in the diagnosis of tuberculosis, other methods are to all intents and purposes, useless. My opinion has been, and it is confirmed by Glover's annotation, that microscopic examination of milk, sputum, etc., by whole-time and part-time inspectors of the Ministry of Agriculture was inconclusive and a waste of time.

Yours faithfully,
J. W. HALL MASHETER.

Ruddle House,
Newnham-on-Severn.
August 1st, 1938.

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AN EXPLANATION

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—I would be much obliged if you would allow me an opportunity of explaining the captions and descriptive remarks which are appearing under photographs of the Sanatorium of the People's Dispensary for Sick Animals of the Poor at Ilford, in the current issue of *The Sphere*.

We have always regretted the loose interpretation so often placed upon the title "Veterinary Surgeon" and I would like to make it clear that this Society does everything in its power to prevent the title being used in connection with its staff in stories issued to or used by the Press. Every effort has been made to have the captions referred to altered, but unfortunately the advance copy submitted to me was received too late for anything to be done in the matter.

Thanking you,
I am,
Yours faithfully,
E. BRIDGES WEBB,
General Secretary.

The People's Dispensary for Sick Animals of the Poor,
14, Clifford Street, W.1.
July 29th, 1938.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT OF 1937 (PART IV)

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1st to 15th July, 1938	30	33	—	—	—	—	1	35	26
Corresponding period in									
1937	20	42	3	2,575	1	1	3	42	15
1936	13	14	—	—	4	6	1	77	93
1935	10	11	—	—	7	8	7	113	106
Total 1st January to 15th July, 1938	511	566	155	19,939	42	70	104	335	221
Corresponding period in									
1937	431	514	9	3,246	86	123	130	662	411
1936	271	319	4	379	74	213	145	1,148	816
1935	219	251	34	10,208	77	162	198	1,086	616

NOTE.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.